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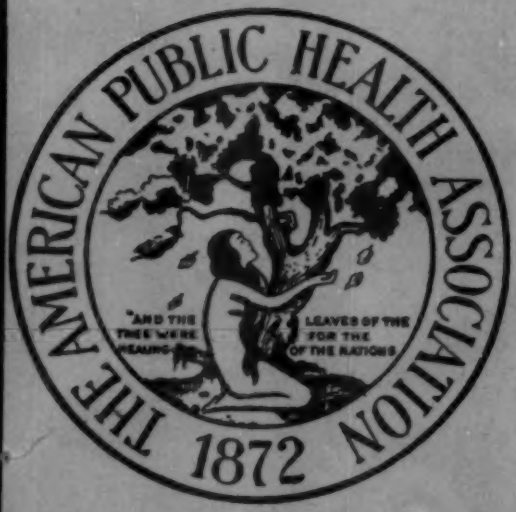

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CONTENTS

PAGE

Practical Experience with Poliomyelitis Vaccine 547
Questions and Answers 563

Radiological Health or Radiation Protection? 575
MIRIAM SACHS, M.D., AND RICHARD SULLIVAN, M.E., A.M., M.P.H.

Academic Preparation for Health Education 581
HUGH R. LEAVELL, M.D., DR.P.H.

Recent Trends in the Distribution of Physicians in Upstate New York . . 585
MILTON TERRIS, M.D., M.P.H., AND MARY A. MONK, PH.D.

Dimensions of Population Mobility and Change 592
ROBERT D. GROVE, PH.D.

Continued on page vi

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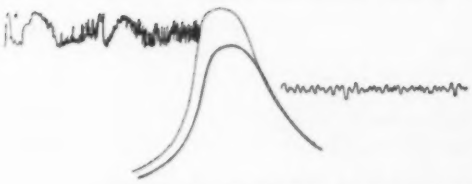

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1. Doyle, P. J., and Livingston, S.: J. Pediat. *43*:413 (Oct.) 1953.
2. Livingston, S., and Petersen, D.: To be published.
3. Pence, L. M.: Texas State J. Med. *50*:290 (May) 1954.

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Contents—Continued PAGE

Arthropod-Borne Encephalitides in Japan and Southeast Asia 597
MAJOR EDWARD L. BUESCHER, MC

City of the Future—A Public Health Engineering Challenge 601
MORRIS M. COHN, SC.D.

An Approach to Improving Health Services for Migrant Agricultural Workers 606
RUTH B. HOWARD, M.D., M.P.H., AND GEORGIA B. PERKINS, M.D., M.P.H.

Comparison of Coliform Group Organisms with Enterococci from Well Waters 612
CASSANDRA RITTER; IVAN F. SHULL, B.S.C.E., M.P.H.; AND ROBERT L. QUINLEY

Proper School Lighting 619
EVERETT M. STRONG

EDITORIALS:
An Inescapable Public Health Responsibility 623
Should the Premarital Blood Test Be Compulsory? 624

Suggested Home Accident Prevention Activities for Health Departments. A. L. CHAPMAN, M.D., Chairman, Subcommittee on Accident Prevention of the Committee on Administrative Practice, ROSCOE P. KANDLE, M.D., Chairman 625

Committee Reports:
Cooperative Formulation of School Nurse Functions. Committee on School Nursing 631
FLORENCE L. FOGLE, CHAIRMAN

School Health Service Statistics. Committee on School Health Service Statistics 636
ALAN FOORD, M.D., CHAIRMAN

Statement on Chemical Additives. Committee on Chemicals Introduced in Foods 643
HAROLD R. SANDSTEAD, M.D., CHAIRMAN

Clearing House on Public Health Salary Information and Personnel Needs . 645

Credit Lines 650

Books and Reports 656

Books Received 664

A Selected Public Health Bibliography 666

Association News 669
Eighty-Fourth Annual Meeting, Atlantic City, N. J., November 12-16: Street Plan of Atlantic City, Hotel Rates, Hotel Reservation Form. News of Affiliated Societies. Death of Robert Stanley Breed, Ph.D.

Employment Service 674

News from the Field 679

Conferences and Dates 689

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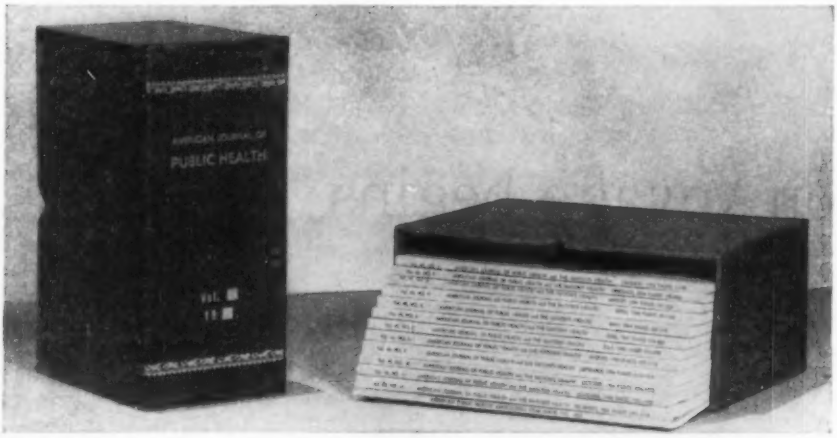

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INDEX TO ADVERTISERS

	Page
American Public Health Association:	
Book Service	VIII, XXXIII
Membership Application Blank	XXIX
Sustaining Members	XXVII
Allied Mills, Inc. (Animal Laboratory Feeding)	XII
Angel, H. Reeve (984H Ultra Filter)	XXXI
Ayerst Laboratories (Mysoline)	V
Baltimore Biological Laboratory, Inc. (Milk Plating Media)	XXVIII
Becton, Dickinson and Company (Pipetting Outfits)	IX
Borden's (Bremil and Mull-Soy)	XX
Brown Laboratory (Reagents for Serology)	XXXII
Coca-Cola	XXIX
Corning Glass	XIII
Difco Laboratories	Back Cover
Directory of Health Service	XXX
Black & Veatch	
Dickman Laboratories	
Emerson Venable, P.E.	
Professional Examination Service, APHA	
Good-Lite Mfg. Co. (Visual Testing Equipment)	XXXI
International Equipment Company (Centrifuges)	XXIV
Kimble Glass	III
Lederle Laboratories (Products for Laboratory Medicine)	XXXV
Lederle Laboratories (Mumps Vaccine)	XXXII
E. Leitz, Inc. (Microprojectors)	XV
Lily-Tulip Cup Corp.	XXI
Modern Swimming Pool Co., Inc.	XXVIII
Mosby, C. V., Company	XXXIV
National Dairy Council	XIV
Oval Wood Dish Corporation	II
Pennsylvania Salt Manufacturing Co.	XVIII
Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc., (Bonamine)	VII
Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc. (Tetracyn)	XIX
Ralston Purina Company (Chow for Guinea Pigs)	XXIII
Ross Laboratories (formerly M & R Laboratories)	XVI, XVII
Schleicher & Schuell (Filter Papers)	690
Steiner Sales Co. (Washroom Sanitation)	XXXII
Vantage Press	690
Wallace & Tiernan (WT Silactor)	XXVI
Wallace & Tiernan (Ointment Salundek)	XXVIII
Wander Company (Ovaltine)	XXV
Wyeth, Inc. (Sparine)	X, XI
Wyeth, Inc. (Bicillin)	XXII

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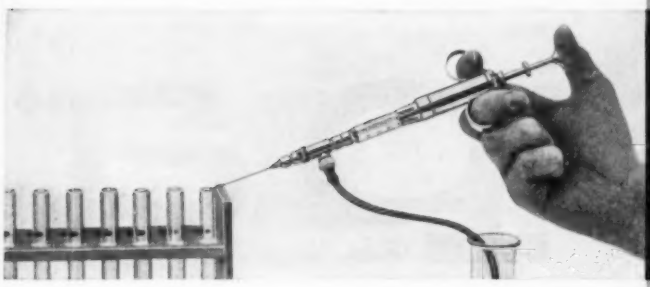

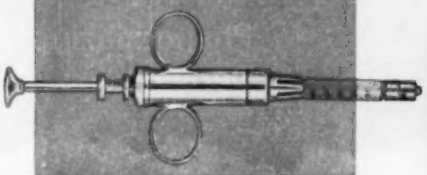

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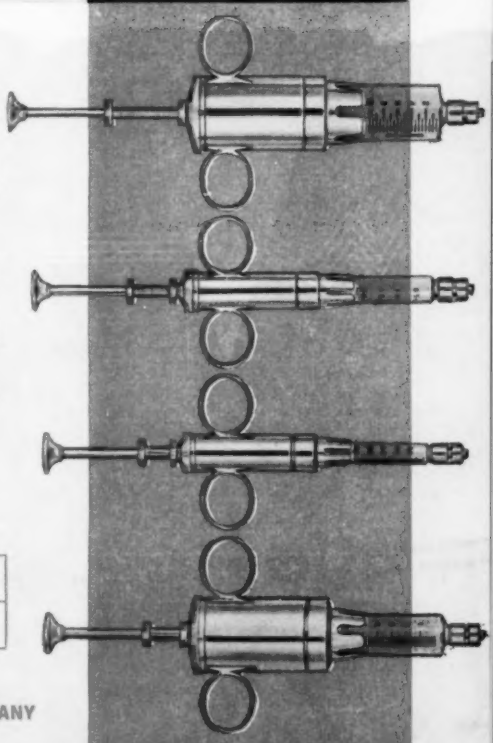

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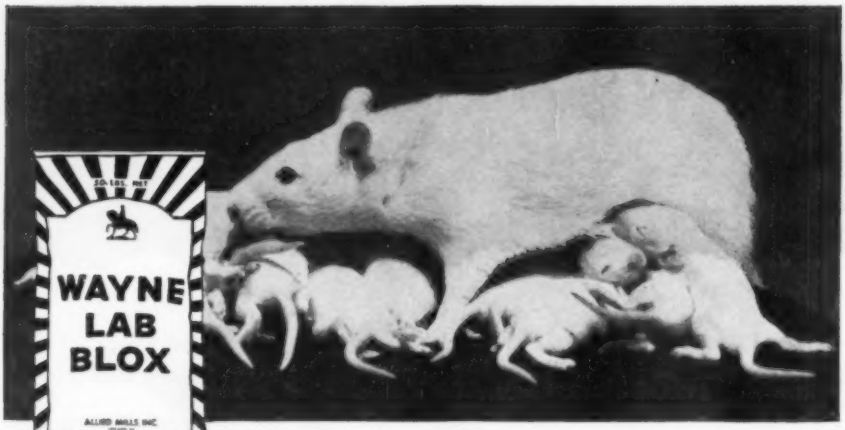

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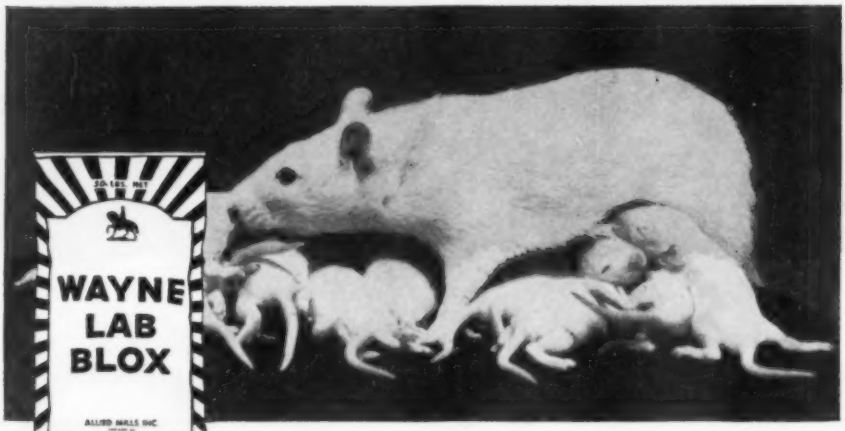

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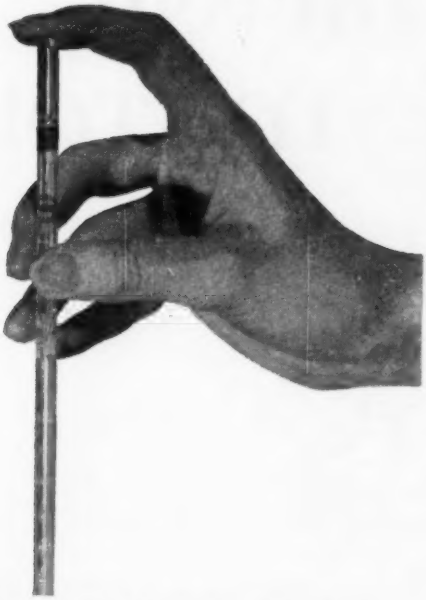

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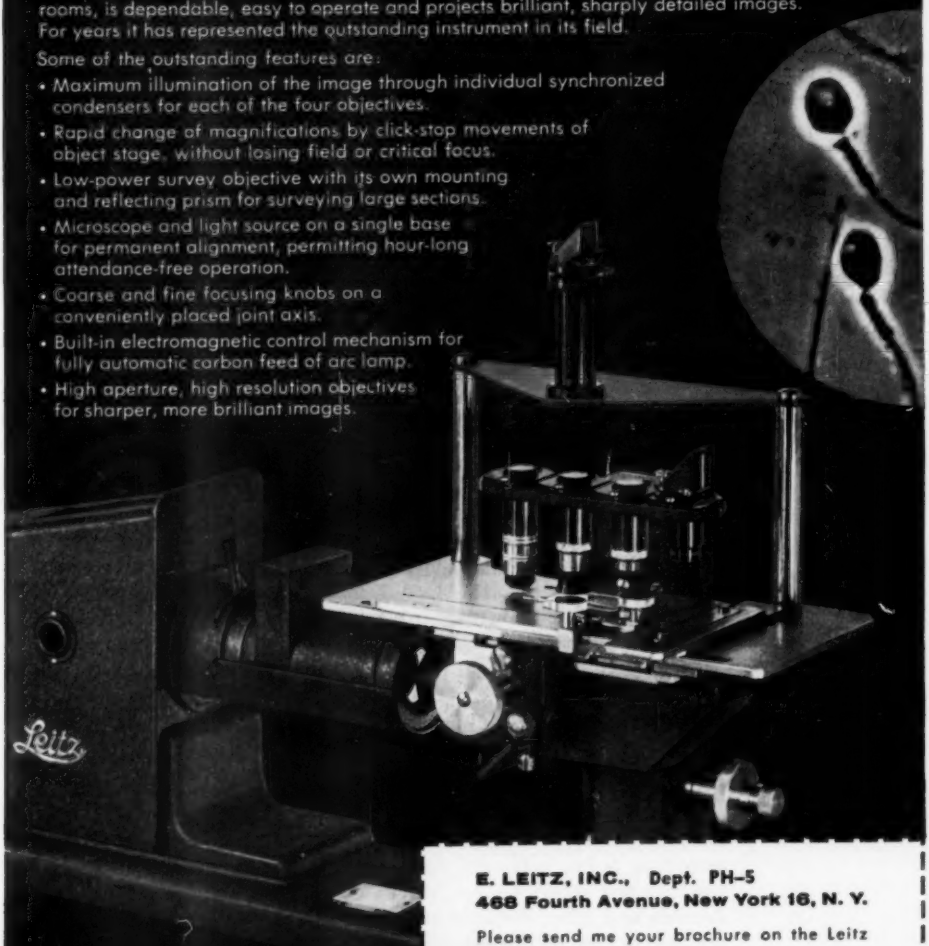

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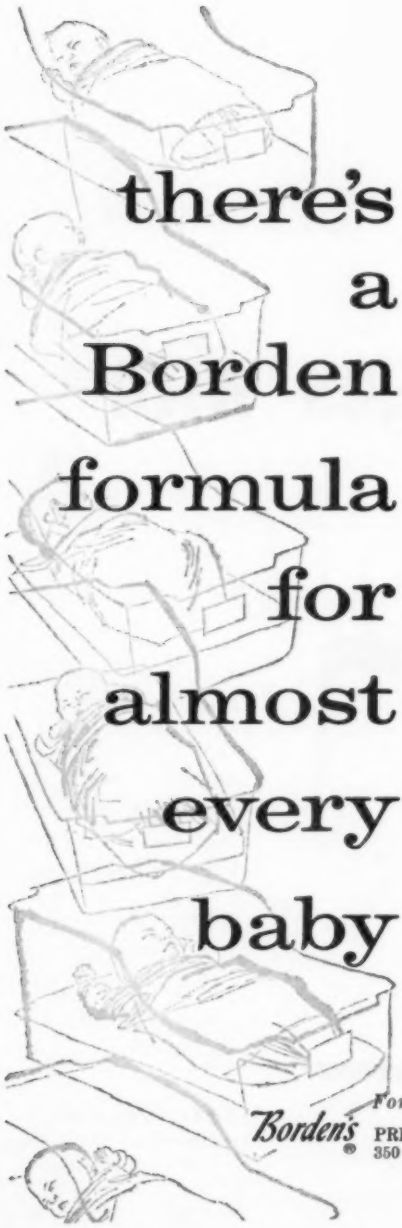

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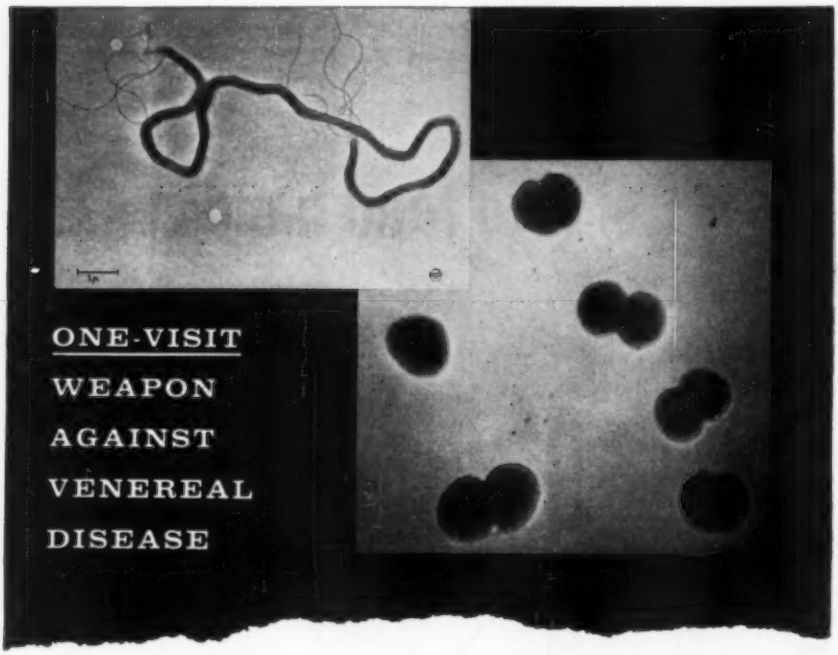

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1. Smith, C.A., and others: Am. J. Syph., Gonor. & Ven. Dis. *38*:136 (March) 1954. 2. Council on Pharmacy and Chemistry. New and Nonofficial Remedies. J. B. Lippincott Co., Philadelphia, 1955, p. 166.

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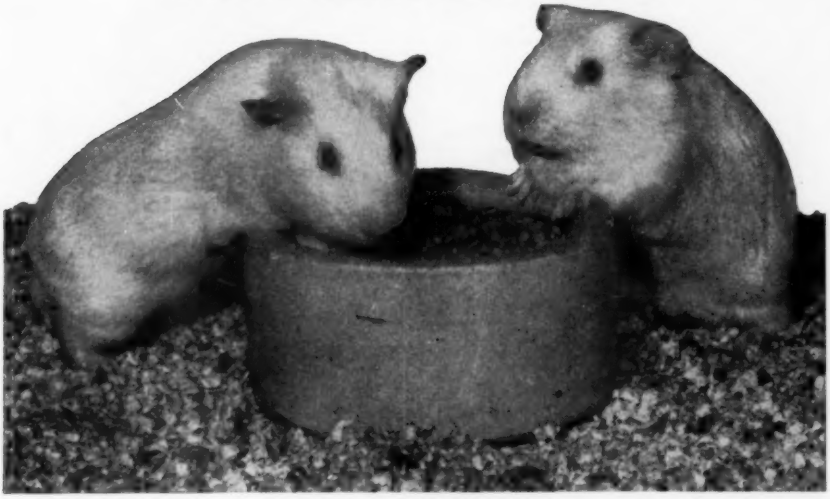

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Practical Experience with Poliomyelitis Vaccine

As we embark upon a new poliomyelitis vaccination campaign, this discussion of the previous year's experience takes on added values and meanings. All who heard it will want to refresh their memories. Those who could not attend will profit even more from the reading.

CHAIRMAN HILLEBOE: Ladies and Gentlemen: for those of us who are practitioners of public health I suppose that the four-month period, from April 12 to August 12 of this year, was the most difficult one that any of us had experienced in the last twenty years. At least that is true for those of us who are health officers and had to bear the brunt, at the grass roots, of the things that happened with us and in other places in the United States.

I am sure many of these problems—that will be discussed today will be those that will be of help to us in the future. I would hope that the first four months' experience will be used for purposes of setting patterns for the future. It is our hope in the health departments that we can now develop our immunization program against poliomyelitis during the coming years through the regular channels and in the usual way.

During the past summer we have had not only the benefit of experience in the United States but we have also had the benefit of experience in Canada and in Denmark and in one or two other countries. And today some of the practical experiences in these places will be recounted by those who are familiar with the details.

I think it is important to point out that today we are talking about practical experience. We are not going into the

Presented before a Special Session of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 17, 1955.

Presiding: Herman E. Hilleboe, M.D.
Moderator: Malcolm H. Merrill, M.D.
Panel Participants: Robert D. Defries, M.D.; Lloyd Florio, M.D.; Thomas Francis, Jr., M.D.; Jonas E. Salk, M.D.; Leonard A. Scheele, M.D.; Hart E. Van Riper, M.D.
Resource Persons: David Bodian, M.D.; Hugh L. Dwyer, M.D.; Roy F. Feemster, M.D.; Alexander D. Langmuir, M.D.; Neal Nathanson, M.D.; Lawrence J. Peterson.

theoretical considerations. We are not reviewing the history nor are we getting into the detailed intricacies of the laboratory production and some of the problems involved.

Today our moderator is Dr. Malcolm H. Merrill, who is director of public health in the State of California. Dr. Merrill.

MODERATOR: Thank you, Dr. Hilleboe. It is a pleasure for us to have this opportunity to meet with these experts and be brought up to date on what is happening in the field of poliomyelitis. As Dr. Hilleboe has indicated, during the past several years, and particularly during the past several months, we have been privileged to live through and be part of one of the most exciting dramas in the history of public health. I am sure every person in this room, and certainly millions upon millions of people throughout North America and the world, actually have been actors upon this immense stage. The drama has been replete with elements of suspense, frustration, despair, frequent recriminations, sometimes a lot of confidence, sometimes doubt, and occasionally a bit of humor. The master drama frequently embodies the technic of tragic situations with a little spark of humor at the correct time, and this actually occurred to some of us, I am sure, in the course of our exciting days of the past number of months.

I recall one incident which occurred on the sixth day following the dramatic occasion of last April in which I was temporarily away from the telephone and out of reach of the news reporters. One of the earnest reporters did finally reach one of my colleagues in the department, and the telephonic intercommunication between them went something like this:

The reporter said, "Is it true that you were in conference with Dr. Merrill early this morning?" The answer was yes. And the reporter said, "Would you be willing to tell me what you talked about?" The reply was yes. "May I quote you?" "Yes." "What did you talk about?" "We said our gardens are being neglected."

I have indicated that we have run the gamut for many months throughout the recent drama, yet I sense that, throughout the play thus far, the one dominant thread has been the feeling and expectation that we are on the threshold of achieving another significant public health victory. The drama is not yet completed, though the play has been moving very fast. No one can predict precisely at this point what the ending will be. Today we are going to pause briefly between the acts to take on some stars. We have a number of leading actors who have come here to give us their interpretation of events thus far and to attempt to predict what the next act will bring.

In addition to the formally named participants there are many hundreds of you who, I am sure, are also experts and part of the cast. When I say you are on the team and that you are experts, I am not using this term facetiously, because I venture to say every one of you has played an important role in this dama of our experiences with poliomyelitis. If we could mold together all of the information that is available here from our experts and from all of you, I think we will have taken a long step forward in the solution of our problems.

The ground rules of the panel are something like this: There are significant developments pertaining to vaccine production and testing that will be announced and described by Surgeon General Scheele. The discussion will center around the contents and implications of an interim report of the Public Health Service Technical Committee on Poliomyelitis Vaccine, which is being released as of this hour here in Kansas City and in Washington, D. C.

This will serve as the focal point for discussions on problems of safety, potency, production estimates, and distribution of the vaccine by Dr. Scheele, Dr. Salk, Dr. Bodian, Dr. Langmuir, and other members of the panel.

Then, we are happy to have Dr. Defries here with us. He is going to tell us something about the current situation in Canada as he sees it. We are hoping that Dr. Francis will tell us about some of the studies that he is carrying on with reference to the response of children to inoculation with the vaccine. Perhaps you would like to hear from Mr. Peterson about what is happening in Idaho and from Dr. Feemster as to what is happening in Massachusetts. I am sure we want to hear from Dr. Van Riper about some of the current plans on paralysis.

But this afternoon you are all members of the panel. There are slips of paper being distributed on which we hope that you will write down the burning questions that you have and filter them on up here to us. Our resource people are going to work them out and get them in shape for us so that we can really try to stump our panel members with them. Perhaps they will stump some of our super experts, the resource people themselves.

I call on Surgeon General Scheele to tell us something about the current report on the problems of vaccine production, testing, and distribution.

DR. SCHEELE: First I want to give you a bird's-eye view of the interest and activities of the Public Health Service in relation to this vaccine.

One of our activities stems from our work under the Biologics Control Act. Under it there is licensing of establishments and licensing of products sold in interstate and foreign commerce. Our staff develops and publishes minimum requirements for the safety, purity, and potency of biological products.

We have statutory responsibilities to control biologicals. We are, however, assisting the states and the manufacturers in the voluntary allocation of poliomyelitis vaccine while supplies remain short.

The Congress took special action and gave us other special responsibilities with respect to this vaccine. Congress appropriated 4.5 million dollars to be allotted to the states for the conduct of poliomyelitis programs. In addition, it appropriated 30 million dollars to be allotted to the states on an equitable basis for the purchase and use of vaccine. The plans of all but two of the states have been submitted to the Public Health Service and when I left Washington plans of 51 states and territories had been approved.

To handle the problems of national distribution, the Secretary of Health, Education, and Welfare appointed a National Advisory Committee on Poliomyelitis Vaccine. I will not go into details of the membership of that group, but it is representative. Through this committee, the present voluntary plan was developed.

The committee recommended initially —and the majority of the states have accepted its recommendations—that while supplies were short, the vaccine be restricted to youngsters in the five- to nine-year age bracket. Recently the committee extended this age group from birth to 15 years and included pregnant women in the priority group. It was strongly recommended that the states at first add only a total of five years above or below the original five- to nine-age group.

We cannot predict the exact flow of supply. However, every effort is being made to have the full industry potential in action at an early date. We expect to see a step-up in the release of vaccine as we pass December and move into the early months of 1956. So far we have reached something over 13 million cc for the National Foundation of Infantile

Paralysis; another 600,000 cc went into early commercial use, and 11 million additional cc have gone into the voluntary distribution program.*

We established a surveillance program that many of you know about. Many of you heard Dr. Alexander Langmuir when he described the field results of use of the vaccine in 1955.† I hope we can hear a few words from him on that topic later today, so I will not say any more about it now.

Up to July 8 the Public Health Service was assisted by ad hoc committees which advised us on scientific problems relating to production of vaccine, but on that date we announced a permanent committee named The Technical Committee on Poliomyelitis Vaccine. I should say for the committee and the Public Health Service that we have had excellent cooperation from everyone who has been concerned with these problems. Industry has done a very wonderful research job, and Dr. Salk, Dr. Bodian, and the others have all put their shoulders to the wheel to gain new information as rapidly as possible.

On the Technical Committee are: Dr. Jonas Salk of the University of Pittsburgh, Dr. Thomas Francis of the University of Michigan, Dr. Joseph E. Smadel of Walter Reed Army Medical Center, Dr. Richard E. Shope of the Rockefeller Institute, Dr. Carl Larson of the National Institutes of Health, and Dr. James A. Shannon, director of the National Institutes of Health, who serves as chairman. That group presented a report to me on the 11th of this month, and our moderator has suggested that I read it to you. (Dr. Scheele then read the Interim Report of the Public Health Service Technical Committee on Poliomyelitis Vaccine. Since this public document has been published in the Journal of the American Medical Association (159, 15:1444–1447, Dec. 10, 1955) only the summary is reproduced here.)

"In summary, the Committee is of the opinion that the principal factors which were involved in manufacturing difficulties have been identified and corrective measures have been taken.

"Among these factors is the absolute need for removal of particles within which virus may be protected from inactivation by formaldehyde. Provisions have been made to insure as far as possible the removal of such protected particles by suitably spaced filtration procedures.

"In addition, the safety test program has been strengthened by improved sampling procedures in the tissue culture tests and by increasing the sensitivity of the monkey safety tests. These measures, together with continuous review of plant production records, assure the safety of released vaccine and should make possible an increased availability of vaccine."

DR. SCHEELE: I want to remind you that none of the things referred to in the report means a sudden change in safety. I want to remind you further that as time passes, changes in this vaccine—as in all vaccines and literally in everything we live with—will come along. This is just part of the normal process of improvement. The vaccine is safe and well worth using. It has now been used in over seven million individuals, with the actual numbers probably running to nine or ten million. This, to me, means we have a remarkable record of safety. You have heard some of the evidence of the vaccine's efficacy.

In concluding, I want to apologize for two of us here. Dr. Langmuir has to be in Stockholm for a meeting early Monday morning and will have to leave shortly. Unfortunately, I have been called back to Washington and have to be there early in the morning. There are people here who represent the Pub-

* As of March 2, 1956, a total of 36,245,000 cc had been released.

† Langmuir, A.D.; Nathanson, N.; and Hall, W. J. The Surveillance of Poliomyelitis in the United States in 1955. A.J.P.H. 46:75–88 (Jan.), 1956.

lic Health Service. I remind you that Dr. Salk, Dr. Francis, and Dr. Bodian, and members of our Technical Advisory Committee can speak with a voice of authority on the Public Health Service.

MODERATOR: I think, Dr. Langmuir, we will ask you now to give us a brief summary of the paper you presented on Tuesday.

DR. LANGMUIR: Dr. Merrill, I have but two points: We have had very excellent cooperation from all the states and territories in the regular reporting of every case that occurs in a vaccinated child. I can say categorically that, since the middle of May when the new vaccine standards were promulgated, there has not been a single lot of vaccine in which any information that has come to our attention reflects in any way regarding its safety. The vaccine, since the middle of May, has been entirely safe in our experience.

The second point: Many states have done very careful studies. We have preliminary reports from 11 states and one city. Because of limited supplies the great majority of the children this year, received only one dose. These primarily were in the clinics supported by the National Foundation for Infantile Paralysis. The results, while still preliminary and subject to change—the final laboratory results have not come in—are, I think, quite sound and show ratios of attack rates in vaccinated children compared to unvaccinated children in the order of two to one, or three to one, or up to five to one, or greater, averaging about three to one in favor of the vaccine. We have a check on these studies—which are still preliminary—from 33 states of the cases of poliomyelitis by paralysis and by individual years of age. For the first time on record, in any experience that I know of, the attack rates in seven- and eight-year-old children are substantially and significantly lower than in any other age group, up to the age of 15. This is the group that received a large part of the vaccine in the first and second grade school clinics. We feel this is an independent confirmation that the vaccine worked.

MODERATOR: Thank you very much Dr. Langmuir. I am sure there are many detailed questions that you in the audience would like to propound with reference to the studies that Dr. Langmuir and his staff have been conducting. I hope you will write them out and send them on to us.

In this report that Dr. Scheele read to us every sentence has a lot of meaning. I heard many things this time that I had not appreciated as I read the report last night and again this morning, and I am sure there are many things between the lines in this report that some of us perhaps did not catch. So it might be a good idea if we ask Dr. Salk to show us a few slides and interpret some of the sentences that are in this report, with particular reference to problems of safety, of potency, and whether or not a safe and potent vaccine can be consistently produced by the manufacturers. Dr. Salk, we are giving you a big order. Will you take over and see what you can do with it.

DR. SALK: I would like to reiterate a point that Dr. Scheele made concerning the significance of the Technical Committee's report. I hope you will carry away with you the idea that its significance is in terms of the very last phrase, which says, "and should make possible an increased availability of vaccine." The basis for the release of vaccine is also set forth. The committee's concept of requirements for safety seems to be expressed by two considerations: (1) The record of the test itself on a given lot, and (2) the plant performance. As is emphasized in the report several times, it is this combination that gives the assurance for safety that is desired.

Now, what you may be thinking, and

what many people think, is that it is difficult — on the basis of a single test of a sample of vaccine — to be sure that the material that was not tested is also free of infectious virus. Nevertheless, the principal objective is to eliminate, for all practical purposes, the presence of infectious virus from each single dose of each batch of vaccine released for use.

One has to point out that this degree of safety cannot be ascertained merely on the basis of a test of a sample of the finished batch, no matter how large, unless one uses the whole batch, and then there is none remaining for use. To provide the kind of assurance that is required for vaccine that is made from an agent that has a potential hazard of any strain of poliomyelitis virus more than the usual kind of care in processing and testing is required than has heretofore been applied to other less hazardous antigens.

What I would like to do now is to go through quickly a schematic presentation of the features in the process of testing for safety. (Dr. Salk's paper was published in the January issue of the American Journal of Public Health, Vol. 46 No. 1, pages 1–14, and is not reproduced here.)

MODERATOR: I think this sharpens up somewhat for some of us the basic problems that were mentioned by Dr. Scheele, and we are going to try to sharpen these up more on specific questions that come to us.

I think we will go next to Dr. Defries and ask him to tell us what is going on in Canada. I have heard rumors, and I think you must have heard rumors that they have discontinued their program, that all sorts of weird things have happened. Dr. Defries will tell us what happened.

DR. DEFRIES: Before speaking of the Canadian experience with the Salk poliomyelitis vaccine, I would state that there are ten provincial or state departments of health and a Federal Department, situated in Ottawa. A nationwide trial of the vaccine is therefore easier to arrange than in the United States. (Canada's estimated population for 1955 is 15,750,000.) There is also the Dominion Council of Health, an advisory body to the Federal Department, consisting of the deputy-minister, Dr. G. D. W. Cameron, who is chairman, the ten provincial deputy-ministers, four others representing labor, agriculture, and the women of Canada, and a technical adviser—16 in all—meeting twice a year. The minister of health for Canada is the Honorable Paul Martin and his leadership has been highly effective.

A factor of importance was the financial support from the National Health Grants of Canada, which now provide 40 million dollars yearly for general public health work, hospital construction and special fields. The trial of the vaccine has been a joint program—federal and provincial. Half the cost of the vaccine was supplied by the Federal Department through the National Health Grants, and half by the provincial departments, and local health departments provided for the administration of the vaccine.

For the collection and study of data, the Division of Epidemiology of the Federal Department arranged with the epidemiologist of each of the provinces for the collection and forwarding of essential information.

The Laboratory of Hygiene in the Federal Department, the counterpart of the Division of Biological Standards of the National Institutes of Health at Bethesda, housed in a splendid new building, was ready to undertake the responsibility of retesting every lot of vaccine offered for distribution in Canada. The safety of the vaccine was further assured by this double testing.

The Canadian trial of the vaccine followed the planning of the nation-

wide trial in the United States by the National Foundation for Infantile Paralysis. In April, 1954, when your field trial was commencing, our Dominion Council of Health recommended a trial in Canada, 500,000 persons, to be commenced in the spring of 1955. It was considered that it should be a public health program, because it was a trial, there was need for the collection and assessment of data and, because it was the only practical plan in view of the limited amount of vaccine.

This plan centered in the production of vaccine in the Connaught Medical Research Laboratories, University of Toronto. These laboratories were established in 1914 for medical research and the preparation of essential biological products as a medical public service. With the support of the National Foundation for Infantile Paralysis and the Canadian health grants studies of poliomyelitis viruses had been conducted by Dr. A. J. Rhodes and his colleagues for six years. In the course of these studies he repeated the work of Enders, Weller, and Robbins, using the strictly synthetic medium No. 199 introduced by Morgan, Morton, and Parker. Dr. Leone Farrell, with Dr. Rhodes and his colleagues, introduced a method for the preparation in quantity of poliomyelitis viruses, using large flat bottles and gentle rocking during incubation.

It was therefore expected that the laboratories would be able to produce the necessary quantity of vaccine in time for the trial. This was accomplished and about two million cc were distributed during April, May, and June, 1955. The administration was commenced in several of the provinces on April 4, a week before the report of the Vaccine Evaluation Center was made at Ann Arbor by Dr. Thomas Francis, Jr. This indicates that the planning had been made many months before the report was presented. In two provinces, British Columbia and Nova Scotia, three doses of vaccine were given as originally suggested and in the other provinces, two doses.

While the Canadian trial was proceeding, our Dominion Council of Health unanimously recommended that plans be made for 1956, providing for a much larger distribution. Announcement was made that the Institute of Microbiology, University of Montreal, would be able to provide vaccine during 1956, on the completion of their new laboratory building. Accordingly the Connaught Medical Research Laboratories undertook to prepare sufficient vaccine for two million persons and the amount necessary to provide third doses for 750,000 or more children who had received two doses.

To make this large production possible, the Connaught undertook to enlarge its facilities, necessitating the planning and construction of a new building for this work, at a cost of more than one million dollars. Changes in production methods, including the adoption of large metal containers in place of glass bottles, permitted only of the production of virus culture fluids which has been continued without interruption and increased to more than twice the rate of last year. It was not, however, until September that inactivation of virus was resumed. In the meantime a large supply of virus culture fluids has been made ready. The revised methods of safety testing have extended the time required in the production of vaccine in the Connaught to four months. The results of the first lots of vaccine in the new tanks will not be available for several weeks.

Only a brief reference is made to findings. Reactions following the administration were exceptionally few, even less than are reported with diphtheria toxoid. No problems arose through omitting a preservative. Distribution of the vaccine in sealed glass

ampules was necessary as a safeguard.

Three cases only of poliomyelitis were reported in Canada to the Federal Department as occurring within one month of the administration of a dose of vaccine. In one, the diagnosis has not been confirmed, in one the onset of illness was the day previous, and in the third the day after the administration.

Pending the study of the data to be made after November 30 no statement for Canada can be made. However, from preliminary information, the minister of health, Mr. Martin, stated on October 31 that vaccination had reduced the incidence of paralysis in the vaccinated group.

In British Columbia, Dr. G. F. Amyot, deputy-minister of health, has issued a preliminary report by Dr. A. J. Nelson, provincial epidemiologist, showing that in the vaccinated group, age 5–7 years, numbering approximately 43,000 who received three doses, no case of paralytic poliomyelitis was reported in contrast with 10 cases in the unvaccinated group of approximately 12,500.

In Ontario, in which data relating to 310,000 children who received two doses are being thoroughly studied by the Provincial Department of Health, a preliminary report indicates a definite reduction in the number of paralytic poliomyelitis reported in the vaccinated group.

The Canadian experience with poliomyelitis vaccine has been very satisfactory. Preparation of vaccine sufficient for two and a half million persons has required the construction of a new building which will provide the maximum safeguards in production and the introduction of new equipment to permit the greatly increased production. It is expected that the quantity of vaccine required will be available for administration in the spring and the plan followed will be similar to that used last spring. In addition, it is expected, also, that vaccine will be furnished by the Institute of Microbiology, University of Montreal. These arrangements should meet the requirements for vaccine during 1956.

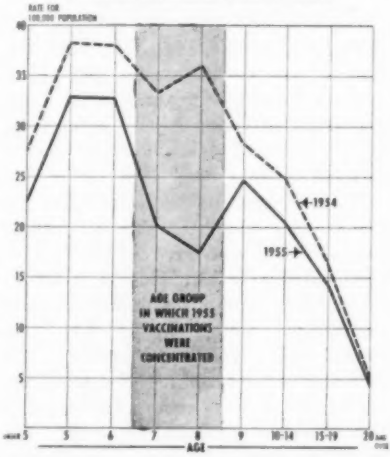
MODERATOR: Thank you very much. I think that gives us a good background. We will ask Dr. Van Riper what the program is of the National Foundation for Infantile Paralysis.

DR. VAN RIPER: The National Foundation proposes to continue the support of research, not only with the vaccine that is currently in use but also with vaccines that may be put into trial in the coming years.

We have the advantage of receiving from the hospitals—where patients with poliomyelitis are hospitalized—patient registration forms, and as of October 1 we had received 63 per cent of the patient registration forms of poliomyelitis cases admitted to hospitals in 1955 (Figure 1). There appears to be a very

Figure 1

DROP IN ACUTE POLIO HOSPITAL ADMISSIONS AMONG VACCINATED AGE GROUPS



Based on data for June 20–November 6, 1954 and June 26–November 19, 1955. Compiled by the National Foundation for Infantile Paralysis.

definite reduction in the admission rate of poliomyelitis in the seven- and eight-year-age group.

Of equal interest is the fact that as you review the diagnosis and the degree of paralysis as reported there is a definite reduction in paralysis. Since we receive reports at 30 and 90 days, we also see that there appears to be a very definite increase in the rate of recovery of those who have been admitted as paralytic cases.

We are now in the process of attempting to identify the patient registration form with the vaccination records in the states to determine how much vaccine these individuals received, the dates, and additional data. I give this to you only as confirmatory information to bear out what Dr. Langmuir told you on Tuesday and repeated very briefly here today. The patient care forms certainly indicate a marked reduction of admissions of poliomyelitis to the hospitals in the age group that received vaccine in 1954, and in the larger number, approximately six and a half million, who received it under the foundation program in 1955.

As to the foundation's future activity in the distribution of vaccine, as we have told you, we do not anticipate the distribution of further vaccine supplies for any program other than research programs that our own grantees maintain and wish to carry out in the coming months or years.

MODERATOR: Thank you very much. Dr. Defries, your comments precipitated a question. Is it true that a series of approximately six lots of vaccine were proved to contain live virus in Canada about the month of May or June? This rumor is commonly heard.

DR. DEFRIES: In answer to the question, in the first 21 vaccines prepared in the Connaught Medical Research Laboratories no lot was found unsatisfactory due to the presence of traces of living virus as demonstrated in tissue culture testing. Two lots of the 21 were not used because of possible lesions in the spinal cord of one monkey in the 36 used in testing each lot. Five additional lots of vaccine were prepared in April and May but were not distributed as traces of live virus were found in tissue culture testing in three of these in trivalent vaccine. Tests were not completed on one lot because of bacterial contamination.

MODERATOR: Thank you. Here is a question on the problem of inadequate filtration. When and how was the problem of filtration of the vaccine in commercial laboratories first recognized? Dr. Bodian, would you comment on that?

DR. BODIAN: I would say that the problem was visualized in setting up the minimum requirements, but its importance was not appreciated until the events of April, and until the subsequent review of the differences of details of manufacture in different commercial laboratories.

There have been discussions about this problem and about ways of circumventing it, since the Technical Report of the Public Health Service on June 10, which first pointed out the nature of the problem. The actual means of standardizing the approach to a solution have been developed more recently. There is no doubt in the minds of any of the Technical Committee, I feel, that the new filtration requirements are critical steps. The important thing is that there is now a minimum level of efficiency of filtration that is required from each manufacturer which should be adequate for removal of resistant particles, rather than an implication that ordinary filtration will be sufficient.

MODERATOR: Thank you. The next question has to do with cortisone. Please explain the use of cortisone-treated monkeys in testing safety and what have been the results?

DR. BODIAN: It has been known for some time that it is possible to increase the sensitivity of monkeys injected with virus by concomitantly injecting cortisone or other materials intramuscularly, and in recent months additional evidence has developed that the use of cortisone plus other provocative stimuli could, in fact, increase the "takes" in monkeys inoculated with very small amounts of virus.

I think that one should make it clear, however, that the increase in sensitivity is not extraordinarily great but may be as much as tenfold, which is nevertheless a definite gain in the sensitivity of the test.

I might explain at this point that I feel that perhaps as much gain in increasing the sensitivity of the monkey safety test is achieved by combining three routes of inoculation, as by the use of cortisone injections at the same time.

MODERATOR: This question follows right along. Why is the vaccine tried on monkeys and not on other animals?

DR. BODIAN: Actually, the vaccine is tried on other animals, for the purpose of assuring that other viruses are not present which affect those particular animals. The monkey happens to be the most susceptible animal species for poliomyelitis virus, and there has been the feeling all along that it might be more sensitive than the human being, comparing the two species on a quantitative basis. Of course, it is not possible to test every milliliter of vaccine in monkeys, and basically the tissue culture test is much more sensitive than the monkey test, so that it is the primary safety test which is carried out with a much larger sample of vaccine. The monkey test is the final test, which in its new form, under the present regulations, should be entirely adequate in itself to safeguard against any future failures of safety.

DR. FRANCIS: Especially with the aggregates of the virus particles.

DR. BODIAN: I think the point that Dr. Francis made was a very good one, since where infective aggregates are involved it is possible that the monkey test may be superior to the tissue culture test; whereas in the general experience of testing poliomyelitis viruses the tissue culture tests have been by far superior as a means of detection. We hope, of course, that there will not be any aggregates from now on to be detected.

MODERATOR: This very inquisitive person wants to know what type of monkey is used in the safety test.

DR. BODIAN: The rhesus monkey from India, or a closely related species from the Philippines with a longer tail, known traditionally as the crab eating or cynomolgus macaque. I think most of you are familiar with the rhesus monkey from India.

MODERATOR: Is formaldehyde the only thing that can be used? Why only formaldehyde for inactivation?

DR. SALK: There are really more ways of killing a cat than choking it with cream. The same thing is true with poliomyelitis virus. Infectivity can be destroyed by heat, by lowering the pH to the acid side or raising it to the alkaline side. A number of chemical or physical agents can be used. Formaldehyde has the particular property of destroying infectivity with more marked retention of antigencity than is possible with most other chemical or physical agents.

Studies done in our laboratory indicate that there is nothing we have tried that is really better than formaldehyde and that formaldehyde is just as good as the best of the other methods that have been studied comparatively.

MODERATOR: Dr. Florio, here is one for you. A mother comes down with poliomyelitis. All her young children have had poliomyelitis vaccination. Is it all right to let them go on to school or should they be kept out of school?

DR. FLORIO: I am sure it is all right for them to go on to school, regardless of whether they have had their immunization or not. For every case of poliomyelitis there may well be hundreds of carriers, and since we never detect these, or practically never except on an experimental basis, there is absolutely no sense in keeping them home.

DR. BODIAN: I would like to say one word about this, and that is that they have been going to school presumably during the previous week when the family probably had been infected, and in that case they have already made contact with any who are their usual playmates.

MODERATOR: Carrying that point one step further, once a child has received the poliomyelitis vaccine, may that child still become a carrier if exposed to the virus?

DR. SALK: Yes, I think our information shows that a vaccinated person can acquire an infection, and under such circumstances can transmit it. Dr. Howe's studies indicate that in the presence of high levels of antibody the carrier condition can either be markedly curtailed or be prevented entirely. It is entirely possible that in the presence of some basic immunization that the carrier stage may be somewhat shorter than without prior immunization.

DR. BODIAN: I would like to amplify that because it touches on a very important issue in relation to the future of poliomyelitis. Although we do not have a large amount of evidence on this point, what we have suggests that, with a high enough serum antibody response to immunization, there could be either a restriction of the amount of virus carried or even a complete prevention of the carrier state. If one projects from this, and this is purely speculation, that there could be a general phenomenon of reduction of the amount of virus carried in an immunized population, because of widespread vaccination, you can see that this could have a community effect in prevention, as well as the direct effect of the vaccine on the vaccinated child.

MODERATOR: Do I understand the use of the vaccine prevents paralytic poliomyelitis on the basis of our present evidence and not infectious poliomyelitis?

DR. BODIAN: Not necessarily.

DR. FRANCIS: We have the information from last year's field trial that some people who were vaccinated got poliomyelitis. On the other hand, we have information which points out that the severity of the cases which were called poliomyelitis among the vaccinated was less than among the unvaccinated generally.

MODERATOR: What points can be presented to counter the assertion that the vaccine evaluated this year, 1955, produced its prophylactic effect because of the small amount of poliomyelitis virus present in the vaccine?

DR. FRANCIS: Dr. Salk presented some data on one of his slides referring to that. The evidence is of this nature: If a small amount of active virus, as an attenuated virus, is given to a human subject or to monkeys, one does not get the amount of antibody formation which has been seen with the vaccine. Dr. Sabin's work, inoculating monkeys with different doses of attenuated virus, showed that when he dropped below approximately 10,000 tissue culture infectious doses in the inoculum given intramuscularly there was inconsistent antibody formation. That is evidence that a small amount of active virus is not of itself the essential factor. If multiplication and infection took place, I would anticipate higher antibody levels than were obtained. Furthermore, without multiplication one would not expect infection.

DR. BODIAN: May I comment on this? As far as I am aware, no manufacturer's lot of vaccine which had not been involved in difficulties in the field had any

virus isolated from the vaccine itself in later laboratory tests. No lots other than those referred to in Public Health Service releases have been shown to be causally associated with poliomyelitis in either the vaccinated child or in any contacts of a vaccinated child. In other words, the great majority of lots of vaccine used in 1955, comprising several million doses, have given no evidence of the existence of even minute traces of live virus.

A second point which elaborates on what Dr. Francis said is that in the field trial there were 400,000 children vaccinated, among whom there was no clinical evidence of difficulty due to residual live virus. Moreover, in this large population the proportion who responded with serum antibody rises was so large that if the serum antibody response were due to live virus, one would have expected many more cases from that experience than were observed. The same is true for manufacturing lots of very large size in 1955; if a lot with almost a million doses can produce satisfactory antibody responses in a high proportion of individuals without a single proved case of poliomyelitis due to vaccine, it seems to me that the balance of evidence indicates that antibody production was not the result of live virus in the vaccine.

MODERATOR: Dr. Bodian, Dr. Florio wants to ask you to enlarge on that further.

DR. FLORIO: Have you ever looked in the stools of those who have been immunized with safe vaccine and found or not found any virus?

DR. BODIAN: I have not done that. If a large portion of vaccine were producing virus in the stools we should have had a corresponding poliomyelitis experience. If there were extensive excretion of virus, we should have had trouble with any of the large lots. This was not so.

MODERATOR: The next question elaborates more on that last comment you made.

What about vaccinated children transmitting infection to parents and siblings when the child itself did not come down? Is there any evidence that satellite cases, such as we observed surrounding the lots that we know now did contain poliomyelitis virus, do we have any evidence that such satellite cases have occurred surrounding the use of other vaccine? Dr. Nathanson, would you comment on that?

DR. NATHANSON: We have been receiving reports from time to time of cases of poliomyelitis occurring among family contacts, all vaccinated individuals. On following these up—and by following up I mean we get the lot number of the vaccine which was used to vaccinate the individual, and then check on a nationwide basis more similar reports on individuals who received the same lot of vaccine—I would say that our information is that all such cases appear to be coincidental or can be explained by coincidence.

DR. FLORIO: I would like to take a small exception to that. It is true that all can be explained by coincidence, but also there is an explanation of a very close association with individuals who have been known to excrete virus in established cases, and we have had this happen to us where the individuals come down. We have found virus in the stools with the children that were inoculated, and the relationship has been so close that, while it can be explained by coincidence, it can also be explained that this is a direct infection.

MODERATOR: Mr. Peterson is going to comment on that.

MR. PETERSON: I would like to emphasize, from our Idaho experience, that we certainly agree with Dr. Florio. We believe that we can say with assurance that we had 59 cases which were associated with vaccinated children in Idaho, where the children themselves

who received the vaccine did not come down with the disease. Of these 59 cases, to further verify the fact, we have 44 isolations of poliomyelitis virus from these 59 cases. We still have studies under way on the balance of the group.

MODERATOR: Dr. Bodian, perhaps we have two ideas mixed up here.

DR. BODIAN: I think we ought to be clear about what Mr. Peterson is saying. The instances that he describes are associated with manufacturing lots which did cause paralytic poliomyelitis in other children who received those lots. Dr. Florio, I presume, is talking about lots which are not known to be defective. There is no evidence to my knowledge that infection due to the vaccine, as shown by virus excretion or unusually high antibody rises to a single vaccine dose, has occurred with any lots other than those clearly associated with cases in vaccinated children, in April and May. All lots released since April are entirely free of suspicion, as far as I am aware.

MODERATOR: I wonder if it is not a simple experiment that can be settled, once and for all, during the winter season when we do not have a very high carrier rate in the community.

DR. BODIAN: I think the antibody response gives us a partial answer to that, namely, that individuals who actually are infected and are carrying virus because of an infection due to vaccine should have better antibody responses.

MODERATOR: Could we not follow the stools of a number of patients for days or weeks following immunization and really pin this down? Is there not a crucial test? I suspect it is being done.

DR. SALK: I say it is neither better nor easier to do antibody studies than it is to do the other kind of studies to which you referred, and I do not know why there is prejudice against using the serologic evidence to show that infectious virus is absent when the serologic evidence has been used the other way to show that infectious virus is present.

DR. FLORIO: I might say possibly I have been misunderstood here. My remarks related to lots that have been incriminated. I think the evidence there is very clear. I am perfectly willing to admit it is not nearly so clear in lots that have not caused clinical poliomyelitis.

I might also point out that we had only one case of poliomyelitis in Denver due to the incriminated vaccine, out of 450 cc that were administered, approximately, but we had a number of satellite cases, so it is possible to have very few initial cases but to have many more satellite cases. Now, there are associations (of cases) with vaccine that have never been incriminated, and these are to be expected, and I certainly am not making any statement one way or the other that these presumably safe vaccines have anything to do with the poliomyelitis that is acquired by the parents, let us say.

MODERATOR: Thank you very much. You had better listen carefully to this one, Dr. Van Riper, as it is one for you.

The parents of children in the first and second grades given the first and second shots want to know how and when the third or booster shot will come. How do we tell them?

DR. VAN RIPER: This answer is also rather long and involved, because we have to go back to the planning in October, 1954, when the National Foundation contracted with the manufacturers to produce vaccine in the interim between the completion of the field trials and the Francis report. Then it was determined, on April 12, 1955, to change the method of dosage that was used in the field trials, "one, one and four" to "one, two to four, and seven months later."

The National Foundation met with a group of health officers and discussed this problem of organizing clinics for

a third dose of vaccine some seven or more months after the completion of the first and second grade program, which we hoped would be complete by June of 1955. We must recognize that not all state health departments are so organized as to hold public immunization clinics of the magnitude that was required in this poliomyelitis vaccine program. At about that time also the federal government appropriated some thirty million dollars for the purchase of vaccine, and there was indication in some states, at least, that other funds would be available. Upon the advice and consultation of a group of individuals it was determined that the foundation would not provide the third dose; first, because it would be available through state funds for the indigent, and, second, because it seemed advisable that those who could afford to pay for a third dose of vaccine might go to their own family physicians.

MODERATOR: We have one silent partner up here whom we have not heard from yet, and somebody has propounded a very good question for him. Dr. Feemster, we would like you to answer this: What is the correlation between the decision of Massachusetts to discontinue the vaccine program with their epidemic and the fact that the company which supplied Massachusetts originally is no longer producing the vaccine?

DR. FEEMSTER: Massachusetts has a very conservative advisory committee. We entered the field trials in 1954. I think the point is, however, we did enter the field trial. This year the committee has been demanding more evidence of the safety of the vaccine. When they have discussed the subject they have felt that the manufacturers have not had the time to work out all of their production problems. They claim to know of work that is going on which would throw light on this problem, and as soon as they have the assurances, that they need, they expect to meet and consider their recommendation for the postponement of public participation in the vaccination program. Perhaps evidence reported upon here may be significant, perhaps not, I do not know—I am not on the Massachusetts Advisory Committee.

The second point I would like to make is that I am personally convinced that vaccine had nothing to do with the epidemic in Massachusetts in 1955. As I sat at my desk and saw the pins placed on my pin map from day to day, I saw the disease start in Boston and spread outwardly from Boston in the same manner as when you drop a stone into water, and that is a classical picture of what happened in New York City in 1916. If this had been a vaccine-induced epidemic, it should have been a multiple focus epidemic because vaccine was given in all but about eight of the communities in Massachusetts. The epidemic of 1955 did not involve the western part of the state, and yet children in that part of the state received poliomyelitis vaccine from the same lots as those who got it in the eastern part of the state.

DR. FLORIO: Dr. Feemster touched on a point I would like to enlarge on a bit, and that is, to some of us on the firing line—and I do not mean to indicate that some of the gentlemen here who have been concerned with the manufacture and safety of vaccine have not been on the firing line, even more so—I think we need to learn several lessons, and my impression about it is that we should never so precipitously rush into a program again, and that the health officers should be given more information and not kept in the ignorance in which they have been kept when they have been expected to carry this program out.

MODERATOR: As a California health officer I appreciate what you said.

DR. FLORIO: It is easy to sit here,

and in the retrospect point out these things. Once the decisions have been made it seems to me that the outcome in a sense was inevitable, and if I had had the decisions to make I probably would have made them the same way. I do not want anyone to think that I am here criticizing the decisions and the way in which they were made, but I do think that we should not do this type of thing again.

MODERATOR: Mr. Peterson has a comment.

MR. PETERSON: I would like to thank Dr. Florio. Then I would like to ask Dr. Feemster how he was able to sit at his desk.

DR. FEEMSTER: I sat at my desk for the very good reason that I could not get away. By the second week of the epidemic the State House exchange called up to our office and said Dr. Feemster has more lines coming to his office. We had both of the lines engaged all the time with five or six other calls waiting. I not only was not able to get away from my desk, but I could not get away from my phone at home. It rang on until 1 and 2 and 3 o'clock in the night. The people of Massachusetts were hungry for information, and since my name was in the papers as having had some information, I was asked to give it. That is the reason why I did not get away from my desk.

MODERATOR: Dr. Francis, has the value of the 1954 field trials been reduced by the fact that the current vaccine is produced by methods somewhat different from those originally employed?

DR. FRANCIS: No, I do not think that any changes or any modifications have altered the value of those observations. I would like to take the opportunity now to say that the continued analysis and examination of the field data, including laboratory results which had not been completed at the time of the report, or trying to put these together in various combinations, have not really changed in any significant fashion the results of the 1954 trial. We said at that time, and we have said repeatedly, that when one is dealing with different conditions and different materials, one cannot transpose those figures; on the other hand, the basic observation, the principles involved, I think, are sound and nothing has happened to change our minds on that in any respect.

MODERATOR: Thank you. We have two more questions now to pose, and then our time is about to run out. What are Dr. Salk's ideas on the intradermal method of administration of the vaccine? Why not use it so that the vaccine that we have available will go further?

DR. SALK: I do not think it matters by what route vaccine is given, whether intradermally or subcutaneously or intramuscularly, as long as the antigenic mass administered is maintained. There is no immunologic advantage to the intradermal route. If the implication of the question is that 0.1 cc intradermally is equal to 1.0 cc given by another route, I want to point out that the antibody response, in relation to dose, is on a geometric scale, not an arithmetic scale. Now, that is as much as I am going to say because otherwise I get too involved. (This is illustrated in the August 6, 1955, J.A.M.A.)

To give a direct and specific answer, I will say that antibody response is a function of antigenic mass, and antigenic mass is the resultant of volume and potency, so that it is the amount that is given and not the route by which you give it that is the most critical factor, from the practical viewpoint, if vaccines of borderline potency are involved. This is true because whatever immunologic advantage may be associated with the intradermal route is offset by the smaller volume of vaccine that can be so administered.

MODERATOR: Thank you, Dr. Salk.

Now, we have before us here at least fifty questions that we have not been able to get to, and they are good questions. They are penetrating, and they deserve answers that we would all like to have. It is certainly regrettable that we cannot have them here today, but I am going to pose as my final question one to Dr. Van Riper, and it is this: can we turn these questions over to the National Foundation for Infantile Paralysis, Dr. Van Riper, and can you get answers for them and distribute them so that public health workers all over America will have them and have the benefit of this detailed information that some of us have been able to get here today?

DR. VAN RIPER: Dr. Merrill, if you would like to give those to the National Foundation, we will attempt to get the answers by sending them to the ones we think most competent to answer, and if Dr. Atwater thinks it is wise, we will publish them in the American Journal of Public Health. We have in the past, to get information to the doctors, even done direct mailing. So if you want to turn them over to us, we will do our best.

MODERATOR: Would you like to have them? What is your response? (The audience indicated approval.)

As I say, they are penetrating questions, and there are many of them that we had hoped we would be able to get to here today and answer for you. We hope it has been helpful and that we have brought out some of the highlights, at least, of the questions that have occurred to you.

With the more recent information that was given to us by the Surgeon General, we are hopeful that the whole program is really back on the track now and that we are going to be able to proceed.

DR. FRANCIS: I have a comment, if you please. I would like only to comment on a statement of Dr. Florio's earlier. It happens to be a point in which I have a good deal of interest, and this was a statement as to the effect that there are a hundred people infected for every case that occurred. This is a traditional statement, for which the evidence is getting poorer every year. I think that the evidence at the present time has shown up very well this summer or this spring. When cases occurred in vaccination satellite cases, they were usually in members of the family, and the extension into the community, even in Idaho and California, was a very limited affair. So I think it again emphasizes that poliomyelitis is not of family distribution ordinarily but it is a rather closed circuit and a limited form of spread under our conditions of life.

CHAIRMAN HILLEBOE: We will continue this discussion at the Association meeting in Atlantic City in 1956. Thank you for your attention. The meeting is adjourned.

Practical Experience with Poliomyelitis Vaccine

Questions and Answers

Following the special session on Practical Experience with Poliomyelitis Vaccine at the 83rd Annual Meeting of the Association in Kansas City, Mo., the large audience supplied many questions, only a few of which could be answered at the time.

Knowing that these questions arose from genuine bafflement in the experience of many persons, it has been thought well to collect the entire list of questions and to have them answered by competent persons.

The Journal is indebted to Hart E. Van Riper, M.D., medical director of the National Foundation for Infantile Paralysis, Inc., New York, N. Y., for preparing the following answers. In several instances the names of experts chosen to answer questions have been appended to their replies.

It should be noted that these answers have been updated to February, 1956.

Historical Questions

1. *Was there on hand an adequate amount of vaccine to carry out the program of the National Foundation for Infantile Paralysis when results were given on April 12?*

2. *How long before there will be enough safe vaccine to take care of the 30–40 millions of dollars already appropriated for this purpose?*

3. *Do the experts really feel enough research had been done before undertaking the program launched after the report on April 12?*

1. In the light of what was then known about vaccine production, and if there had been no exceptional delays or difficulties, it is probable that there would have been enough vaccine available before the seasonable and regional advent of poliomyelitis to carry out the projected program of the National Foundation on schedule. This would have required about 18,000,000 cc of vaccine. There was not that much tested vaccine on hand on April 12, 1955.

2. This can only be guessed at—probably from 6 to 12 months.

3. Most experts in poliomyelitis were of the opinion that sufficient research had been done by April 12, 1955, to warrant a wide-scale vaccination program. If they had not been of this opinion, the 1954 field trial would not have been undertaken. A few experts disagreed with this opinion.

Is it true that a series of approximately six lots of vaccine were proved to contain live virus in Canada, about the month of May or June? This rumor is commonly heard.

In the first 21 vaccines prepared in the Connaught Medical Research Laboratories no lot was found unsatisfactory due to the presence of traces of living virus as demonstrated in tissue culture testing. Two lots of the 21 were not used because of possible lesions in the spinal cord of one monkey in the 36 used in testing each lot. Five additional lots of vaccine were prepared in April and May but were not distributed as traces of live virus were found in tissue culture testing in three of these in trivalent vaccine. Tests were not completed on one lot because of bacterial contamination.—R. D. Defries, M.D.

Have any members of the panel or resource persons had their own children or grandchildren given polio vaccine?

Yes. The children of Dr. Salk and Dr. Van Riper were among the very first to receive Salk vaccine.

Is there no competent, respected worker in virology or epidemiology who doubts (or has doubted) the effectiveness or safety (or both) of vaccine now being distributed?

There are doubtless some who have some reservations. The names of John Enders, Joseph Stokes, and Albert Sabin may be suggested.

Vaccine Field Trials

What percentage of children in the field trial were vaccinated and subsequently trans-

ferred to nonvaccinated group due to development of active disease within short period after vaccination?

Zero per cent. The children in the 1954 field trial who developed poliomyelitis within 30 days after vaccination were not transferred from one study group to another. They were eliminated from the statistical comparisons and calculations altogether.

Did you find clinical polio (paralytic or nonparalytic) in anybody with a titer of 1:4 prior to the diesase?

We have gone back to search the records of the Poliomyelitis Vaccine Evaluation Center very carefully in an effort to give an unequivocal reply and I have again reviewed the data on all cases of paralytic poliomyelitis. Consequently, I would submit the following reply:

Over 90 per cent of the patients with poliomyelitis had antibodies in their blood at the time the acute specimen was taken. These can be considered to have developed in the course of illness prior to that time.

Consequently, the only information to which one can refer the question is that obtained from children who were bled before vaccination or observation was begun. Unfortunately, only 24 cases were reported from this entire group.

There was one instance in an observed control child with a reported titer of 16 to Type 1 in blood taken June 23 whose onset was September 10, 1954. Type 1 virus was isolated from the stool. There was minimal paralysis recorded on the first examination. This appears to be the only case in which there is satisfactory evidence of antibody being present to an identified type of virus prior to onset.—Thomas Francis, Jr., M.D.

1. *Are we dealing with three vaccines: (1) 1954—Field Trials; (2) pre-May 27, 1955; and (3) post-May 27, 1955?*
2. *If so, has the most recent one had a field trial?*

1. No. There were no significant differences between the lots of vaccine used in the 1954 vaccine field trials and the vaccine used before and after May 27, 1955. There were differences in the details of the manufacturing process and the procedures of safety-testing for lots of vaccine produced and released in these three different periods, but the end-product, that is, the properly prepared Salk vaccine, was essentially the same.

2. The reported use of the vaccine in 1955, as presented to and by the Poliomyelitis Surveillance Unit of the U. S. Public Health Service, may be considered a field trial and a successful one.

Because of the study given to problems of manufacture and testing, it became possible in 1955 to produce effective vaccine more consistently than before. In this sense, that the chance of anything going wrong with the vaccine was reduced, the late 1955 product might be considered "superior" to the earlier lots.

Vaccine Safety and Safety Testing

What is the estimated calculated risk of inducing poliomyelitis infection by the inoculation of vaccine under present safety standards?

None. No risk.

Please explain the use of cortisone-treated monkeys in testing safety and what have been the results.

The administration of cortisone to test animals makes them more susceptible to poliomyelitis virus infection (and in fact to most other kinds of infection). Hence they are more sensitive to infection from vaccine samples should the sample contain live virus. However, the sensitivity of monkey tests used in testing the trivalent pools of Salk vaccine has also been greatly increased by simultaneous inoculation of the animals intramuscularly, intraspinally, and intracerebrally.

1. *Why is the vaccine tried on monkeys and not on other animals?*
2. *What type of monkey is used?*

1. Only the monkey is susceptible to poliomyelitis virus infection for practical testing procedures. (The cotton rat is also susceptible to Type 2 virus). However the virus pools are also tested on rabbits for the possible presence of B virus, on guinea pigs for *Mycobacterium tuberculosis* and on mice for lymphocytic choriomeningitis.

2. Cynomolgus and rhesus monkeys as a practical testing procedure.

What are the chances of activating a nonparalytic infection into a paralytic case by the present vaccine?

The chances are small. The expected good to be obtained outweighs the possibility of provocation. The risk is further reduced by performing inoculations in nonepidemic seasons.

What points can be presented to counter the assertion that the vaccine evaluated in 1955 produced its prophylactic effect because of the small amount of live polio virus present in the vaccine?

If there were live virus in the vaccine, it might be expected that a disproportionately large number of children and family contacts of children who received the vaccine would have shown evidence of some paralytic involvement, that is, clinically diagnosed poliomyelitis. This was actually the case *only* in the early instance where *known-faulty* batches of vaccine were used (chiefly in Idaho). There were no other epidemic circumstances in 1955 to suggest that live virus in the vaccine could possibly have been the cause. The Poliomyelitis Surveillance Unit of the U. S. Public Health Service noted on November 15, 1955, that among the nearly seven million children who received Salk vaccine in 1955 (except for the known-faulty lots), "no evidence has come to light that tends to incriminate any lot of vaccine of any manufacturer that has been released and used since the new safety standards were adopted."

The possibility that Salk vaccine prepared according to prescribed methods contains live virus which is responsible for antibody formation is altogether an hypothesis for which no proof has been presented. The present evidence of widespread use of the vaccine without infective consequences stands completely against this hypothesis.

Vaccine Manufacture

How long does it take to prepare each lot of vaccine if it passes each test satisfactorily? What is the shortest number of days?

A minimum of 120 days is required to complete the processing from virus culture to final testing of the packaged vaccine.

Do we know exactly what details of manufacture were at fault in the production of the batches of vaccine containing live virus and released last spring?

Unless we have this knowledge we cannot really safeguard against reoccurrence of this event except to hope that the more stringent sampling procedures will detect faulty batches.

This question cannot be answered directly in terms of the batches of vaccine containing live virus and released last spring. However, it can be said that the details of manufacturing, in respect to proper timing of the filtration steps in relation to the inactivation step, could have contributed to inconsistency in manufacturing. It has been reported that a rather high degree of inconsistency characterized the process applied by unnamed manufacturers.

It was realized, before last spring, and this has now been amply confirmed, that sampling procedures alone cannot be used to separate satisfactory from faulty batches of vaccine; therefore, one of the most important safeguards is the demonstration of consistency in the process as revealed by tests on consequent batches.

Thus, the safeguards against recurrence are not dependent upon more stringent sampling procedures, but upon the enforcement of the requirement for demonstration of consistency of manufacturing procedure as a prerequisite for the release of any one batch of vaccine; and upon the application of filtration and all other essential steps in a way that would achieve the desired degree of consistency. These are more fully discussed both in the Technical Committee's Report (J.A.M.A. December 10, 1955, p. 1444) and, also, in a paper in the January, 1956, issue of the American Journal of Public Health (Salk, Poliomyelitis Vaccine in the Fall of 1955).—Jonas E. Salk, M.D.

When and how was the problem of inadequate filtration of the vaccine, in commercial laboratories, first recognized?

The problem of inadequate filtration was recognized when samples of virus fluid, ready for the inactivation step, were carefully examined. It became clear that particles could readily interfere with complete inactivation. When adequate filtration was applied shortly before inactivation, rather than weeks or months previously, the irregularities that had heretofore been observed no longer occurred.—Jonas E. Salk, M.D.

Why is only formaldehyde and not other preservatives used?

Formaldehyde is not used as a preservative but as the inactivating agent. The formaldehyde is neutralized by sodium bisulphite before the final processing takes place.

Why use merthiolate?

Merthiolate is used as a preservative of the Salk vaccine—to suppress possible bacterial and fungal contamination. If the merthiolate is buffered with versene it does not reduce the potency of the vaccine upon storage. However merthiolate is only one of three preservatives now permitted in United States vaccine manufacture. (The other two are benze-

thonium chloride and methyl paraben and propyl paraben combined.) Vaccine manufactured in Canada does not carry a preservative.

Is preservative used at all in any of the vaccine? We had to use the entire 9 cc within six hours after the cap was pierced. Is this up to the particular drug companies?

A preservative is used in all vaccine produced and used in the United States at the present time. The purpose of the preservative is to protect against bacterial and fungal contamination. It is not necessary, therefore, to use the entire content of the vial immediately if it is properly refrigerated.

Epidemiological Questions

What about vaccinated children transmitting infections to parents and siblings?

Vaccinated children cannot transmit poliomyelitis infection to parents and siblings simply because they have been inoculated with properly prepared Salk vaccine, because there is no live virus in this vaccine to cause infection of the child into whom it is injected. If a child already has or later picks up a poliomyelitis infection *in spite of being vaccinated*, this infection could be transmitted to parents and siblings. The proved effectiveness of the Salk vaccine is to prevent paralytic involvement as a result of virus infection. It is not known to what extent it may suppress naturally acquired poliomyelitis infection of the nonparalytic type.

What is the significance in regard to a child who has been inoculated with live virus? Is such a child in any way a carrier and, if so, to what extent?

If a child became infected with poliomyelitis virus as the result of accidental inoculation with a live virus in an improperly prepared vaccine, he would be a carrier of the virus to the same extent as if he had a naturally acquired infection.

Even though the Salk vaccine has proved effective, have there been studies on the incidence in the parents of young children—roughly in the age group 25–34?

No studies specifically directed at this question have been reported; but much information has been gained as a by-product of other epidemiological and statistical studies of the incidence of poliomyelitis (paralytic and nonparalytic) in different age groups. These tend to show that there is an increase in the attack rate of paralytic poliomyelitis among parents of young children. The explanation of this phenomenon has not yet been fully made. It may be related to the number and ages of the children in the family, to the strain of pregnancy, to hygienic practices and standards within a household, or to other still undisclosed factors.

The 1954 Annual Statistical Review of the National Foundation for Infantile Paralysis showed that there was a slight increase in the number of reported hospital admissions for acute poliomyelitis among the 20–29-year-old age group as compared with 18- and 19-year-olds and with the 30 years and over groups. Age-specific case rates for poliomyelitis reported following the 1955 poliomyelitis epidemic in Massachusetts (New England Journal of Medicine, Jan. 19, 1955) reveal a slight upsurge in the 25–29 age group as compared with the five-year age groups immediately preceding and following. This was true both in 1955 and in the five-year average 1950–1954.

It is conceivably possible that the attack rate of poliomyelitis in parents of young children will be reduced by widespread vaccination of the children; but this is neither yet known nor proved. The difficult question of "herd immunity" is involved.

How many cases of paralytic poliomyelitis were prevented by the use of the Salk vaccine in the United States between April, 1955, and November 15, 1955?

Approximately 1,250 to 1,300 cases of paralytic poliomyelitis may be presumed to have been prevented in 1955 as a result of the use of the Salk vaccine. The statistical premises on which this estimate is based are as follows:

1. Seven million children (largely aged seven and eight) vaccinated at least once in 1955 NFIP vaccination program or 1954 field trials. Number vaccinated outside NFIP program unknown.
2. Twenty-eight thousand cases expected from end of May (when first inoculations were substantially under way) to December 31, 1955.
3. Fifteen thousand of these cases (54 per cent) could be expected to be paralytic on basis of experience in 1953 (53 per cent) and 1954 (56 per cent). This number is equivalent to a rate of 9.1 per 100,000.
4. Paralytic attack rate at ages seven and eight could be expected to be 24 per 100,000 (rate for all ages times 2.63), on basis of ratio of rate at ages seven and

eight to crude rates in 1952 (2.64), 1953 (2.83) and 1954 (2.41).

5. At rate of 24 per 100,000, one would expect 1,680 paralytic cases among 7,000,000 children aged seven and eight.
6. At 76 per cent effectiveness, as shown in Langmuir report to APHA, paralytic rate would be 5.76 per 100,000 and only 403 paralytic cases would occur, leaving difference of 1,277 paralytic cases prevented.

How many cases of paralytic poliomyelitis, primary and satellite, were induced by vaccine containing live virus since April, 1955?

The Public Health Service associated 158 cases with Cutter vaccine.

What is the correlation between the decision of Massachusetts to discontinue the program, their epidemic, and the fact that the company that supplied Massachusetts originally is no longer producing the vaccine? Why did Massachusetts stop?

The decision in Massachusetts to discontinue the state's vaccination program was not related to the onset of its polio epidemic. There was no suspicion that the vaccine was in any way responsible for the epidemic. The spread of the epidemic followed the classical radial pattern, spreading out from a hub in Boston. If the vaccine had been in any way involved, cases would have sprung up sporadically at the same time in different parts of the state.

The position of Massachusetts was stated in detail in a letter published in the December 1, 1955, issue of the New England Journal of Medicine and signed by 22 members of the Massachusetts State Polio Advisory Committee. This letter presents what the letter itself calls the committee's "conservative approach to the problem of mass inoculation with vaccine." The summary of the letter follows:

"The action of the Massachusetts State Polio Advisory Committee and the Massachusetts Department of Public Health was based on the following interpretation of the data available to them. The processing of the vaccine in large scale practice did not guarantee a non-infective product. Its release, therefore, was dependent upon clearance after negative results had been obtained in safety tests. There was reason to believe that the limit of sensitivity of safety tests designed to detect minute quantities of live virus had not yet been attained. Therefore, the possibility existed that live virus might, on rare occasions, escape detection in the vaccine. As long as any possibility remained that live virus of the Mahoney type might be present in any portion of the vaccine, it was considered that a risk to the individual and to the community still existed. The Committee gave special weight to the possibility that the establishment of the carrier state in inoculated individuals poses a hazard to the community."

In January, 1956, the Massachusetts State Polio Advisory Committee voted to resume vaccination with the present Salk vaccine in that state.

Vaccine Dosage Schedule and "Booster Shots"

What will be the recommended dosage schedule for 1956?

Two 1 cc injections, spaced from four to six weeks apart, intramuscularly or subcutaneously, with a booster injection at least seven months later.

How many and at what intervals are booster doses recommended for lasting immunity?
After initial immunization, how often should "booster shots" be given to maintain adequate protection against paralytic disease?

After initial or primary immunization with two 1 cc injections spaced from four to six weeks apart, a first "booster" injection should be given at least seven months later. How frequently thereafter additional booster shots may have to be given to maintain adequate protection against paralytic disease is not yet known. This matter is the subject of continuing research on the part of Dr. Salk and others.

What is the maximum permissible interval between first and second doses of vaccine in the primary series? Will the second dose act as a "booster" if given from six to seven months after the first?

The first effective dose of vaccine is a sensitizing dose. The effect of such an injection is not lost if the second one is delayed for six months to a year, or even longer.

If the second injection is given six to 12 months after the first effective one, it will then act as a booster. However, if the second injection is given from four to six weeks after the first, the time will be too short between injections to obtain a true (very high titer of antibody) booster in the 80 per cent of children who were sensitized by the first injection. In the other 20 per cent the second injection acts as a primary sensitization.

It should be recognized that approximately 20 per cent of children injected with vaccine do not respond to the first injection with a measurable rise in antibody titer, such as occurs in the remaining 80 per cent. For this 20 per cent the second injection may be considered to be equivalent to the first effective injection.

Accordingly, the third dose, given six to 12 months after the two primary doses, is intended to act as the booster for all.

Do you feel that a second injection of vaccine at least seven months after the first would produce almost as satisfactory an antibody response as the three injections given in the recommended manner?

The answer to this question must be from the practical viewpoint rather than from the experimental or the theoretical. In selecting any *one* dosage schedule a number of factors must be balanced in trying to achieve a full effect in all persons inoculated. These factors are: (1) potency of the vaccine, (2) responsiveness of the individual, (3) the number, and (4) the spacing of the inoculations.

With vaccine of high potency, *two* injections, seven months apart, could be more effective than *three* injections of a vaccine of lower potency.

The dosage schedule presently proposed, involving three doses, is one that is designed for vaccines of the degree of potency now available and is easily and practicably achieved. One can accomplish the desired full effect more readily by multiple injections than by trying to increase vaccine potency beyond a reasonable point.

Nevertheless, a margin for effectiveness, to provide for contingencies of potency and individual responsiveness, must be considered; and it is for this reason that the recommended schedule was proposed.

Some children who have no antibody to any of the three types prior to inoculation do not develop antibody to all three types after the first dose, depending upon vaccine potency. If the second dose were not administered until seven months later, and such children did respond at that time, they can be said to have experienced primary immunization for the first time when given the second dose.

It is therefore proposed that for those who fail to respond the first time there is a second opportunity at the time of the second injection and, again, a third opportunity at the time of the third injection. In addition, there is then an equal opportunity for all to respond with the booster effect if, in fact, all have reacted by the time of the second dose whenever it was given, whether it be two weeks, four weeks, six weeks, or one year after the first.—Jonas E. Salk, M.D.

Why call the third dose a "booster" one, when it is really the completion of the vaccination?

On the same principle of antibody titer use then the second dose would also be a "booster."

This is partly a semantic question. It has become accepted usage to speak of the first two doses of Salk vaccine, spaced from four to six weeks apart, as the "primary immunization," the first effective dose being called a "sensitizing" dose.

It should be recognized that approximately 20 per cent of the children injected do not respond with a measurable rise in antibody titer to the first injection of Salk vaccine; for them the second injection appears to have the essential sensitizing effect.

When the third dose is given at least seven months later, the outcome of its effect is called "full immunization." The third dose is considered a booster because it ordinarily raises the level of antibody titer high above that attained with the first two doses.

There is a declining level of measurable antibody at the time that the third or booster dose raises it high above the levels obtained with the first two injections.

Will children have to receive a booster shot each year in order to insure protection?

Probably not; but how often remains to be determined by future observation and research. Dr. Salk has observed a comparatively high level of antibody persisting among children who received some of the first experimental injections of vaccine over two years ago.

Is there any possibility in the future just to give one inoculation of polio vaccine instead of three?

Not in the immediate future and not with the present Salk vaccine. While it is true that 1955 experience showed a surprising protective effect among children who received only one injection, the best present recommendation is to give two injections of 1 cc each, spaced from four to six weeks apart, with a third "booster" injection at least seven months later, for "full immunization."

Route of Vaccine Administration

What route of administration is recommended?

Intramuscular injection. With equal doses (1 cc) the evidence shows that intramuscular

injection effects a somewhat higher antibody response than subcutaneous injection. The volume of vaccine that can be effectively given by the intradermal route is limited, and the certainty is diminished of supplying an antigenic mass sufficient to achieve adequate antibody response.

Currently what method of administration (age group, size of dose, route—i.e. intramuscular vs. intracutaneous—number of doses) promises maximum possible decline in: (1) *polio incidence;* (2) *paralytic polio incidence for the coming summer months in view of probable level of supply?*

1. The effect of the vaccine on incidence of nonparalytic polio is unknown at the present time.

(2) The effectiveness of the vaccine in reducing the incidence of *paralytic* poliomyelitis in 1956, and presumably thereafter, will be in proportion to the number of children who actually are vaccinated. Based on 1954 (field trial) and 1955 experience, the incidence should be reduced at least 75 per cent among vaccinated children, possibly more. In the light of all factors of past experience with the vaccine and prediction of possible future supply, it is recommended that the dosage schedule remain what it was in 1955; namely,

Two 1 cc injections given from four to six weeks apart intramuscularly (or subcutaneously) with a "booster" injection of 1 cc at least seven months later.

The age groups eligible for vaccine are being determined by advisory committees of the several states. There are differences regionally in the peaks of incidence of poliomyelitis infection (with and without paralytic involvement). In general, children from one to 14 years and pregnant women are eligible for vaccine. However in some states the age limit has been raised to 19 years and dropped under one year. In other states a narrower age range, around the five to nine age group, has been established.

A Conference on the Use of Poliomyelitis Vaccine, convened in Washington, D. C., on Dec. 7, 1955, by the Surgeon-General of the U. S. Public Health Service, confirmed these recommendations.

What are Dr. Salk's ideas on the intradermal method of administration of the vaccine? Why not use it to make vaccine go farther?

While it is true that a significant antibody response can be elicited in a high proportion of individuals when 0.1 cc is given intradermally, it is equally true that a higher proportion respond when 1.0 cc is given intramuscularly or subcutaneously.

One can elicit antibody responses, over a wide range of dosage, whether vaccine be administered intradermally or intramuscularly or subcutaneously. One should refer not to the *intradermal method* versus some other method, but rather to a *smaller* versus the recommended larger dose.

The use of the intradermal route for administering vaccine provides an excuse for using less vaccine rather than that there is any sound immunologic reason for it. Since the objective is to produce the maximal practicable effect, the evidence suggests that this can be accomplished with greater certainty by using the larger volume.

The practical advantages of administration of vaccine intramuscularly or subcutaneously rather than intradermally is a further consideration beyond the greater assurance afforded by the larger volume to provide the extra margin toward the objective of full effectiveness for all.

The further advantage of the larger dose, either for primary or booster inoculation, is shown in the August 6 issue of the J.A.M.A., and in the January issue of the A.J.P.H., where it is made clear that greater amounts of antigen elicit a higher level of antibody.

This effect may be advantageous for providing the means for preventing not only paralysis, but infection as well and may thereby reduce the number of carriers. In this way the reservior may be reduced, thus protecting those who may not as yet have had an opportunity to receive vaccine. Thus, the more intensive immunization of the lower age group may affect the reservoir, and hence, the epidemic pattern, in a way that may, from the immediate as well as the longer term point of view, exceed the advantages of making vaccine go farther by using smaller doses. Any decision involves compromises so long as vaccine continues in short supply as related to the requirement for total immunization, whatever that requirement may be.—Jonas E. Salk, M.D.

Vaccine Supply and Priorities

How will vaccine be distributed to local health departments?

The distribution of Salk vaccine to local health departments will, in effect, be determined by state health departments and will, of course, depend upon available supplies of vaccine.

The details of this plan of distribution are spelled out in (1) a statement of Dr. Leonard

A. Scheele, Surgeon General of the Public Health Service, before the Senate Committee on Labor and Public Welfare on January 25, 1956; and (2) a Public Health Service Progress Report on the Poliomyelitis Vaccination Program as of January 24, 1956.

The parents of children in the first and second grades given the first and second shots want to know how and when the third or booster shot will come. What do we tell them?

When vaccine for the third or booster shot is available, it will be obtainable from local physicians or health departments. The situation will differ in different localities, for each state and county has the privilege of determining distribution of available supplies of vaccine within its own jurisdiction. This is a question that must be settled on the local community level. The situation as a whole is still fluid and overnight changes in recommendations and regulations may be expected, influenced by the local supply of and demand for vaccine. The National Foundation for Infantile Paralysis will not supply vaccine for the third or booster shot.

How can a medically indigent family actually get access to polio vaccine?

From a local physician or clinic established by local health authorities. This is entirely a local problem to be solved administratively in terms of customs, tradition, and practice in the community. The availability of vaccine will depend upon the state's supply of vaccine and the channels of distribution established by state, county, and local health authorities.

Has the National Foundation for Infantile Paralysis any plans for giving the third injection of vaccine?

None whatsoever.

Is the priority age now officially 0–15 and pregnant women?

Each state has the privilege of setting its own vaccine priority schedules. This is usually done by an advisory committee. In general the priorities have been set at from one to 14 years and pregnant women. In some states, however, the age range has been lifted and in others dropped.

Expiration Date and Storage of Vaccine

Do the present vaccines lose their potency with age? Do you recommend refrigeration storage of the vaccine?

The vaccine, under present standards, has a six months' expiration date. It should be stored under refrigeration at a temperature between 35° and 50° F, the lower limit being preferred. Freezing should be avoided.

How long can the vaccine be saved and used (refrigerated) after the vial is opened?

If a good technic is used in piercing the stopper of the vial, the remaining contents can be kept and used, if properly refrigerated, until the expiration date. It is not advisable actually to open the vial but simply to pierce the stopper with a needle.

1. *How long after expiration date is vaccine safe?*

Any polio vaccine released or cleared for use after May 27, 1955, the date of amendment of Minimum Requirements of the Public Health Service, is considered to be safe for use for an indefinite period of time after the expiration date. There is no evidence for diminishing safety of this product with storage.—David Bodian, M.D.

2. *How is the expiration date of a vaccine determined?*

According to requirements of the Public Health Service, the expiration date of polio vaccine is placed at six months after the date of manufacture or the date of issue. This dating is intended to safeguard potency of the product, since some preservatives, formerly in use, or poor condition of storage, are known to affect potency.—David Bodian, M.D.

3. *Must vaccine be immediately discarded on that date, or is there enough safety factor built in so that vaccine might still be used for another two weeks or even a month?*

With preservatives now in use, and with storage at ordinary refrigerator temperatures, it appears that the present dating of polio vaccine is conservative. It is almost certain that adequate potency is retained for at least several weeks after the expiration date, and probably much longer, under satisfactory conditions of storage.—David Bodian, M.D.

Clinical Questions

Should elective nose and throat operations be postponed until some recommended interval after the administration of vaccine?

Under ordinary circumstances, elective nose and throat operations are not performed during periods of high poliomyelitis incidence. If such an operation has to be performed during an epidemic period, it would be advisable to give two doses of vaccine and then wait a month, if such delay would not endanger the patient's life. Effective vaccination with a properly prepared and tested poliomyelitis vaccine greatly reduces the risk of paralytic poliomyelitis and does not engender or increase the chance of poliomyelitis infection. There is no reason, therefore, why elective nose and throat operations should be postponed following vaccination except that time be allowed for the protective effect of the vaccine to come into play.

What is the possibility of sensitization to penicillin and streptomycin from repeated injections of polio vaccine?

The fact is that such reactions have not been reported. Very small amounts of penicillin and streptomycin have been used in the vaccine. Siegal (The Penicillin Content of Poliomyelitis Vaccine (Salk) and Its Administration to Allergic Patients. A.J.P.H., June, 1955) reported that "the vaccine should offer no hazard either to persons allergic to penicillin or as a source of newly acquired penicillin sensitivity."

Miscellaneous Questions

The local health departments had voluntary help from the local physicians for the first two inoculations. Do you think the local doctors will give their time freely for the next program of inoculations from one to 14 and pregnant women, and if you do not think they will, how can the local health officer put across his program?

Some state and county medical societies have opposed the idea of doctors giving their services free for vaccine programs in 1956. The resolution of this question must be at the local level.

In the light of the proved effectiveness of the Salk vaccine, and the knowledge that its widespread use will prevent thousands of cases of paralytic poliomyelitis, it is hard to believe that local physicians will refuse to cooperate in developing and carrying out local programs of vaccination against paralytic poliomyelitis before the advent of the 1956 polio season. The magnitude of the problem of getting perhaps 35 million children inoculated (at least two injections) against paralytic poliomyelitis cannot be overlooked and perhaps should be stressed.

Physicians may properly look upon this problem as a *medical emergency* and not as a precedent for the future practice of medicine. Once the bulk of the child population is vaccinated against paralytic poliomyelitis, it may be expected that future vaccinations will be part of routine pediatric prophylactic procedure.

What is the difference between "accepted" and "reported" cases of poliomyelitis?

An explanatory note to Table 1 (Poliomyelitis Cases and Deaths Associated with Cutter Vaccine by State and Paralytic Status) of the paper, "The Surveillance of Poliomyelitis in the United States in 1955" by Alexander D. Langmuir, M.D., Neal Nathanson, M.D., and William Jackson Hall, Ph.D., presented before the American Public Health Association on November 15, 1955 (A.J.P.H. January, 1956), makes the following statements concerning "accepted" cases of poliomyelitis:

"Table 1 includes all cases associated with Cutter vaccine which have been 'accepted' by the Poliomyelitis Surveillance Unit through October 28, 1955. 'Accepted' cases meet the following criteria: (1) All cases have been classified as bona fide polio by the Polio Reporting Officer submitting the case; and (2) minimum essential data (county residence, age, sex, date of inoculation, date of onset, paralytic status and manufacturer of vaccine used) have been included in the report submitted.

"It should be noted that for the purposes of this presentation vaccine associated cases used in the tabulations were selected in the following way: (1) Vaccinated Cases: all cases included had onsets before June 1, 1955, so that no cases with onsets more than 50 days after inoculation are included; (2) Family Contact Cases: all cases included had onsets before June 15, 1955, so that no cases with onsets more than 65 days after inoculation of the vaccinated contact are included; and (3) Community Contact Cases: all accepted cases are included without restriction as to date of onset. However, reporting of Community Contact Cases was discontinued on August 1, 1955.

"These data are not final; minor additions, deletions, and corrections are to be expected."

Approximately how long will it be before a practical test is available to detect if a person has had polio—similar to the Schick test for diphtheria?

We have no easy, inexpensive test on the order of the Schick test for determining whether or not a person has had poliomyelitis. Several investigators are interested in and working on possible "skin tests" for the diagnosis and detection of poliomyelitis infection. How soon such tests will actually be developed to a point of practical usefulness, if they can be developed at all, is not known.

However there is available a time-consuming and rather expensive test for determining past poliomyelitis infection: the neutralization test, performed in tissue culture. This test takes about a week. Blood samples must be tested against all three types of polio virus separately.

The complement-fixation test is less expensive and less time-consuming but it has not yet been studied sufficiently to assure reasonably reliable findings.

To what extent is the polio vaccine being used in other countries of the world?

Why is Denmark interested in the vaccine research and not other European countries such as Western Germany and France?

Is the Soviet Union, including the satellites, using the vaccine?

The interest in the Salk vaccine, or modifications of it, is world-wide. Significant research has been conducted in many Western European countries as well as in Canada, where crucial steps in the development of large-scale vaccine production were taken.

Among the countries that have already reported to the World Health Organization on their vaccine research and vaccination plans and programs are the United States, Canada, Denmark, France, Germany, South Africa, and Sweden.

Great Britain has announced a vaccine program for 1956. Plans are also under way for such a program in Australia.

In January, 1956, four top-ranking Russian scientists, members of the Academy of Medicine of the U.S.S.R., visited the United States to get information about the Salk vaccine, presumably for introducing its use in Russia and satellite states. They were reported in the American press as saying that the development of the Salk vaccine showed "the great achievements of American science."

A meeting of experts from all parts of the world was convened by the World Health Organization in Stockholm, Sweden, on November 21, 1955. The following abstract from the report of this meeting reveals the extent to which many nations throughout the world were already working with the Salk polio vaccine in 1955:

Canada

Approximately 860,000 children between the ages of six and nine were injected with poliomyelitis vaccine manufactured at the Connaught Laboratories. Most received subcutaneous injections; about 100,000 intramuscular injections. The dosage was two injections of 1 cc each spaced four weeks apart. There was only one case in which there might possibly have been a relationship between vaccination and the occurrence of paralytic poliomyelitis.

Preliminary results up to the end of October were reported from four provinces. They indicated that among vaccinated children only 1.07 per 100,000 had contracted paralytic poliomyelitis, compared with 5.39 per 100,000 among the unvaccinated.

Denmark

In Denmark epidemics of poliomyelitis have presented a serious problem for many years. In 1952 for example, there were 2,450 paralytic cases in a population of 4½ million, a rate of 56.5 per 100,000 population.

As soon as the results of the 1954 vaccine field trials in the United States were announced, it was therefore decided to start poliomyelitis vaccination immediately. A vaccine was prepared at the Statens Serum-institut, closely following the methods described by Salk. However, the Type 1 strain used was Brunhilde.

An estimated 425,000 school children, approximately from seven to 12 years of age, which was about 98 per cent of the population at these ages, were given two simultaneous intradermal injections of 0.1 to 0.15 ml of the Danish vaccine, a total dose of 0.2 to 0.3 ml. The procedure was repeated after four to six weeks; and will be repeated again in nine to 12 months.

No cases of paralysis have occurred in any of the vaccinated children and no other serious reactions have been observed in the children.

An additional 250,000 children, aged nine months to seven years, were later vaccinated, also without serious reactions.

The protective value of the vaccine could not be fairly estimated in Denmark in 1955 because of the incidence of poliomyelitis in this year was so low. Only seven clinical cases were reported.

France

The Virus Division of the Institut Pasteur in Paris has since 1951 been selecting and studying strains of the different types of poliomyelitis virus with a view toward applying them to a vaccine. The production of an inactivated vaccine was considered mainly as an interim measure pending consideration of the use of a live attenuated vaccine in the future. An experimental group of children aged from two to seven years received three subcutaneous injections of an inactivated vaccine and have been followed for 14 months. No attempts at mass vaccination have yet been carried out in France. An extended field trial was planned but was postponed pending further information when news of accidents in the use of the vaccine in the United States was received in France.

Germany

In Germany the production of poliomyelitis vaccine on a large scale has been in progress at the Behringswerke since 1954. More than 1,500 liters of inactivated virus vaccine have been produced.

From November, 1954, to May, 1955, approximately 100,000 vaccinations were performed among children from one to 15 years of age. Most children received two intramuscular or subcutaneous doses of the vaccine. Exact figures are not known. However, no serious reactions have occurred and no case of paralytic poliomyelitis in a vaccinated child has been reported. In one instance a vaccinated child was thought to have died from poliomyelitis, but this could not be confirmed by laboratory tests.

South Africa

Since 1954 poliomyelitis vaccine has been produced in South Africa on a large scale in the laboratories of the Poliomyelitis Research Foundation. It has minor modifications from the methods used for producing the Salk vaccine in the United States. Trypsinized kidney cells of a South African vervet monkey were used to grow the virus. The Brunhilde strain for Type 1 virus was used and for Types 2 and 3 local South African strains (Collans and Templeon, respectively) were taken.

Following delays and doubts, prompted by reports from the United States, injection of approximately 15,000 children from ages six to 16 years, was finally undertaken in September, 1955. No case of paralytic poliomyelitis has been reported among the vaccinated children. There were two mild cases of skin rash, probably allergic.

Sweden

In Sweden a formalin-treated poliomyelitis vaccine, from virus grown on human embryonic tissue, has been produced and tested on a small scale. In February and March, 1955, a field trial of the vaccine in 2,000 school children was carried out—mainly to test antigenicity. The results were encouraging; no serious side-reactions of any kind were observed. However, on account of the reported vaccine accident in the United States and the failure of some Swedish batches to pass the safety tests, a scheduled vaccination program for the spring of 1956 was called off.

General Recommendations

1. The group [of WHO experts] considered that, subject to the application of the safeguards contained in [other] recommendations, the results obtained with poliomyelitis vaccine in mass immunization campaigns, already carried out in various countries, justified the conclusion that countries with a high incidence of paralytic poliomyelitis should plan to bring vaccination into routine use at an early date.

To put poliomyelitis control into proper proportion with other public health needs, such as rheumatic fever prophylaxis, how much—in percentages—would it be necessary to expand public health budgets, staff, and facilities?

It is impossible to answer this question. However, experience with poliomyelitis vaccination has shown a way toward expanded public health budgets, staff, and facilities. Expansion will occur to the extent that genuine public interest is elicited in the problems which public health can properly solve. There is no facile answer to the business of eliciting public interest and support for specific or general public health objectives. But it cannot be done with the left hand.

How much have the mistakes made in using this vaccine damaged experimentation among human beings with other health and medical programs in the future?

It is impossible to assess such a matter and it can be argued both ways. Mistakes may temporarily slow down progress but in the long run no permanent damage to progress results. The history of medicine is replete with events in which presumably helpful therapeutic and prophylactic agents have done harm. The famous "Lubeck incident" with

BCG vaccine, the introduction of faulty yellow fever vaccine in the 1940's and the still earlier experience with the original diphtheria toxin-antitoxin are well known examples of "mistakes" in the course of efforts to achieve valued prophylactic effects. Viewed in retrospect, these serious "mistakes" did not dangerously discourage progress toward the prevention of disease.

It may well be that the "mistakes" made in the course of using the Salk vaccine—mistakes that were all promptly recognized and corrected—will in the long run encourage experimentation among human subjects in other health and medical programs. The 1954 poliomyelitis vaccine field trial was, after all, the largest controlled clinical experiment in the history of medicine; and its purposes were enthusiastically supported both by the public and the professions.

The assumptions that "science is infallible" and that nothing new should be clinically tried before it is 100 per cent fool-proof are more damaging to scientific progress and human welfare than occasional, though tragic and regrettable, errors. Goethe's motto may be cited: "Mann irrt so lang er strebt" (Man errs so long as he strives).

We have not heard much about the National Foundation for Infantile Paralysis switching its field of interest to mental health since last April. Why?

In the immediate future the National Foundation for Infantile Paralysis has no intention of switching its basic field of interest. While the Salk vaccine is a magnificent weapon against paralytic polio, its mere existence is no guarantee that it will be used as rapidly and widely as it might be to reduce the threat of paralytic polio to the barest minimum.

Based on experience with the introduction of other prophylactic agents, it may be anticipated that years of earnest educational effort will be essential to obtain and retain maximum employment of vaccination for the prevention of paralytic polio.

The vaccine programs of 1954 and 1955 reduced the over-all incidence of paralytic poliomyelitis in the United States by something less than 10 per cent in 1955 (although the vaccine itself was at least 75 per cent effective in preventing paralytic polio among the age groups actually vaccinated). This means that there is still over 90 per cent of the way to go in actually eliminating paralytic poliomyelitis.

It should also be recognized that the National Foundation, and its 3,100 local chapters, have long-term commitments to aid financially those who were stricken with paralytic poliomyelitis in previous years and those who will become involved despite the Salk vaccine. It is estimated that there are perhaps 35,000 victims of paralytic polio in earlier years who can still benefit by the procedures and processes of total medical care and rehabilitation.

The extensive research and professional education programs supported by the March of Dimes have made impact in the total fields of virology and rehabilitation far beyond the prevention of paralytic polio and the treatment of polio patients.

Dental Officer Examinations

Applications are being accepted, until further notice, by the U. S. Civil Service Commission, for examination for dental officer in Grades GS-9 through GS-14. There is no written examination; applicants' qualifications are judged from a review of their experience, education, training, and on corroborative evidence obtained by the commission. There are openings in the field service of the Public Health Service throughout the country, and in departmental and field positions in various federal agencies in Washington and surrounding areas.

Applications should be sent to U. S. Civil Service Commission, Washington 25, D. C.

Radiological Health or Radiation Protection?

MIRIAM SACHS, M.D., F.A.P.H.A., and RICHARD SULLIVAN, M.E., A.M., M.P.H.

Any well organized health department may have within its organizational set-up the professional group necessary to do a creditable job at preventing public injury from radiation hazards, these authors remind us. Mostly it is a matter of recognizing the existence of the hazards and the will to do something to meet them.

One of the beneficial concomitants of the development of nuclear weapons is the emergence of the peace-time applications of nuclear energy—applications so fruitful as to suggest that nuclear fission may well be the most significant technical development of our time. Ionizing radiations are becoming a prominent factor in our everyday life—one more complexity that man, in his progress, has added to community living. The consequent public health responsibility is to maintain all radiation exposure within the generally accepted limits without in any way discouraging the utilization of radiation sources to their maximum advantage.

Radiation protection involves technical considerations that can be dealt with adequately only by a relatively small number of highly specialized and experienced scientists. There do not exist in the whole country enough radiation safety specialists to support rigid radiation regulation where every minute detail of control is spelled out.[1] Though complete radiation protection is, of course, the ultimate objective in a radiological health program, one does not have to be an internationally known physicist or radiobiologist to achieve a goodly measure of success in accepting this new responsibility. The facilities necessary to begin a radiological health program are essentially present in any well organized public health department.

These contentions are not offered to justify incompetence, or to recommend a hasty, unprepared entrance into the field of radiological health. They are merely intended to suggest that the frightening complexity of nuclear physics need not deter the experienced public health practitioner from the application of his skills to the relatively new disease agent of ionizing radiation. In fact, the framework for the application of these skills to the potential sources of radiation injury has already been constructed with great care.

The technical procedures for measuring radiation, the methods for protection against it, and the estimated safe exposure limits have been established—though they may be changed as knowledge increases—by the National Committee on Radiation Protection and are available in National Bureau of Standards handbooks. The expert guidance provided by the committee's recommendations and their widespread acceptance as standards of performance give radiological health a firm foundation unknown in many other, older,

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allegedly more advanced public health activities.

The basic epidemiologic concepts of agent, host, and environment can be adapted to the problems of radiological health and should be so taught. For health officers and departments of health and the general practitioner of medicine, simple principles of radiological health can be explained, leaving the nuclear physics and the slide-rule to the trained radiation expert. Reasoning by analogy—it has been possible to utilize field personnel to study and halt the course of milk-borne streptococcal epidemics without insisting that all these persons understand all the complexities of serologic identification of the streptococcal groups and types.[2]

"An epidemic is commonly defined as a sudden increase in the prevalence of a disease which is more or less constantly present or endemic in a community. To explain the sudden increase, it is necessary to understand the factors which determine the usual or inter-epidemic levels of prevalence and the characteristic distributions which the disease ordinarily manifests in human populations." (Frost 1920; Maxcy 1941.) We seem to be on the verge of an epidemic of the disease resulting from exposure to sources of ionizing radiation. This disease or symptom complex has been endemic in our communities since the discovery of radium and the invention of x-ray machines.[3] We have statistics demonstrating that the incidence of leukemia among roentgenologists as a group is significantly higher than the incidence among physicians generally.[4] We have had experience with a sharply delimited explosive epidemic of radiation disease and death (epidemiologically resembling food-borne typhoid outbursts) in the 41 cases of radium-dial painting poisoning.[5] We live in dread, and hope to prepare against, a pandemic of radiation disease such as resulted in Nagasaki and Hiroshima following atom bombing. Our efforts must be directed, however, not so much toward taking remedial steps once symptoms of radiation disease have appeared, but rather more toward the prevention of conditions under which symptoms and signs might be expected to appear.

A notable difference exists between the diagnostic phase of the classical epidemiology of a disease condition and its counterpart in radiation disease. This is the period of latency (incubation) which may extend over a period of 10, 20, or 30 years or more. "The magnitude of the time delay depends on many factors—mostly biological—but in particular it depends on the magnitude of the dose. The larger the dose the earlier is the appearance of injury. This is important because, barring accidents or gross negligence, the doses are small and the latent period for some of the effects may be very long." [6] The difficulty engendered by a long latent period has already been confronted in the study of environmental carcinogens and certain of the occupational diseases, such as silicosis and berylliosis, and can be surmounted by careful definition in cases of radiation damage.

In the epidemiology of radiation disease we have an enormous body of knowledge with which to start. The gaps in our knowledge are being slowly and steadily filled in by intense research, much of it subsidized by the Atomic Energy Commission, and by the consequent magnificent library of current articles being published.

Agent

All sources of radiation produce their effects by a similar mechanism, ionization, which is the property possessed by radioactive particles or rays of interacting with matter, splitting atoms and molecules into pairs of electrically charged fragments called ions. Ioniza-

tion of living matter results in tissue changes that may affect health. The extent of tissue ionization depends upon the composition of the tissue and the quantity, type, and energy of the radiation. Tissue damage caused by ionization is partially irreversible.

Types of Ionizing Radiation

Alpha Particles—These have tremendous ionizing power, ten thousand times that of gamma rays. However, the relatively large alpha particles have both a low penetrating power and range and are easily stopped by a thick sheet of paper or the external layer of skin on the body. As a result, damage due to external exposure generally is not significant. If, on the other hand, an alpha-emitting substance is swallowed, absorbed, or inhaled severe internal damage may result.

Beta Particles—As negatively charged electrons they have a hundred times the ionizing power of gamma rays but can travel only a few yards through the air. Ordinarily, they can be stopped by clothing and will penetrate only a fraction of an inch into the skin, which they affect very much like a burn. A thin sheet of plastic, such as lucite, or of light metal, such as aluminum, will stop the beta particle. Beta particles are emitted along with gamma rays, generally speaking. However, certain radioisotopes are pure beta emitters.

Gamma and X-rays—These have quite low specific ionization values, but characteristically are capable of deep penetration into matter. Lead, steel, and concrete are among the materials frequently used to reduce gamma or x-rays to harmless levels. As a group, these radiations constitute the chief health hazard of external radiation.

Neutrons—Neutrons are uncharged particles weighing about one-fourth as much as an alpha particle. They are incapable of causing ionization by themselves, but are able to impart sufficient energy to hydrogen atoms for them to then cause ionization. Neutrons of high energy have a much greater biological effect than do low-energy neutrons. When an atom absorbs a neutron it becomes radioactive, or emits gamma ray to get rid of the excess energy introduced by the captured neutron. High-energy neutrons are normally shielded with concrete, steel, water, or paraffin. Low-energy neutrons are readily absorbed by cadmium or boron. The major sources of neutrons are nuclear reactors.

The application and frequency of use of sources of radiation have increased tremendously in the past several years. This increase is not only the result of new developments in atomic pile-produced radioisotopes but is due also to an accelerated use of x-radiation and, in a more limited way, natural sources of gamma radiation, principally radium. It is not uncommon to find industrial plants, research laboratories, and hospitals where total exposure to radiation is the summation of the use of x-ray and fluoroscopic machines, radium, and radioisotopes.

As nuclear reactors are constructed by private enterprise there will be added to our responsibility a radioactive source of great potential danger. The potential harm is created by the large amount of radioactive fission products which accumulate in reactors under continuous operation. Nonetheless, the fact that reactors are potentially hazardous does not mean that they need to be actually so, or that we cannot learn how to live with them in complete safety. Industry has learned how to control and live with many hazards.[7]

There still remain a considerable number of sources of ionizing radiation that are of unknown proportions. Essentially, these are diagnostic and therapeutic x-ray machines in hospitals and in offices of radiologists, physicians

in general, dentists, chiropodists, and veterinarians. As far as the public is concerned, exposure to radiation is probably most common as a result of chest x-rays, dental x-rays, gastrointestinal series, and many other clinical procedures.

It is a matter of sound principle to avoid all unnecessary exposure to ionizing radiation but, as methods for the accurate measurement of ionizing radiations have improved and experimental and clinical observations have accumulated, the idea of a "tolerance" dose has slowly evolved. It is accepted as meaning the amount of radiation to which a person can be exposed for an indefinite number of years without the expectation of demonstrable bodily injury. Both the International Commission on Radiation Protection and the National Committee on Radiation Protection have set the level of 300 milliroentgens per week (measured in free air) as the maximum permissible exposure for whole body irradiation.[6, 8] The maximum permissible exposure limit may be made to function as a measurable attribute of the agent which provides the basis for educational work or field control programs.

The Host

"Every living cell can be damaged and killed by radiation if the dose delivered to it is large enough. All such effects can be produced by any type of ionizing radiation provided it reaches the cell or organ in sufficent amount."[6] It has not been demonstrated that some individuals, as such, are hypersensitive to ionizing radiation or that small doses well tolerated by most, will be detrimental to a few. We are all aware that certain tissues or organs are much more radiosensitive than others: young rapidly growing or dividing cells of an embryonal type are most radiosensitive. This is the attribute of the host that is gratefully used in cancer therapy, where controlled ionizing radiation from high-voltage x-ray machines, radium or radioisotopes is a method of treatment. It is, however, this selfsame attribute of the host that, with unwise or excessive exposure to ionizing radiation, has given prominence to impairment of the bone marrow and other blood-forming organs, to sterility or impaired fertility, and to genetic effects.

Within the last few years, and more especially within recent months, reports have been accumulating of the special susceptibility of infants and young children to ionizing radiation. A pediatrician has sounded a warning note concerning the frequency of roentgenoscopy at monthly or quarterly routine health examinations of the young child.[9] A study has been made of 1,400 of 1,722 infants who received x-ray therapy to the thymus gland between 1925 and 1951. In 17 of these children malignant neoplasia is known to have developed, including seven cases of leukemia and six of carcinoma of the thyroid, a significantly higher incidence than was found among the untreated siblings of the irradiated children or in the general population.[10]

Experimentation on animals has demonstrated that the developing embryo is extremely susceptible to the induction of malformations by radiation and that doses high enough to produce developmental abnormalities do not necessarily cause abortion or prenatal death.[11] The most susceptible period in human embryogenesis appears to be between the second and sixth week of gestation when few women are aware of the existence of pregnancy. Extensive fluoroscopic or radiographic examinations at this critical time could certainly inflict serious, unintentional injury. The recommendation has been made that for females of child-bearing age, examinations, such as pyelograms, gastrointestinal series, and studies of the lumbo-

sacral spine, should be restricted to the two weeks immediately following the end of a menstrual period.[12]

There is no threshold dose for gene mutation which may follow any radiation exposure however small. It should be borne in mind that this factor assumes greater importance as the percentage of the population exposed to radiation increases. Caution is needed, lest in our diagnostic or case-finding methods we risk the occurrence of more genetic change than in a lifetime of work with ionizing radiations.[3]

So far in our present knowledge it does not seem possible to alter the susceptibility of the host as we do by an immunizing process, but in some instances the susceptible host can be selected. Careful medical history for anemia and other underlying diseases, blood counts, and physical examination enable us to choose a host who is not unduly susceptible to radiation injury. The same methods used periodically allow us to discover early symptoms of radiation disease and remove the host from contact with the destructive forces of the agent. Selection of the host applies, of course, only to those employed in industry, or occupied with research, diagnosis, and treatment. Constant observation, investigation, and examination will be required to uncover any, as yet, hidden effects in the general community.

Environment

The control of the environment is the most fruitful field of endeavor in this entire syndrome. Shielding, restriction of exposure time, distance, containment, adequate ventilation, proper disposal of radioactive wastes, and protective clothing and equipment are effective barriers to agent-host interaction. However, the fact that these measures are available does not guarantee that they will be always employed in the manner and to the extent necessary to provide full protection to those exposed to radiation sources. Experience has demonstrated that many of those employing ionizing radiations lack the facilities for determining exposure, are not adequately informed as to the proper methods of protection against it, and perhaps are not even fully aware of the hazard involved. Nor can the individual radiation users be expected fully to comprehend and regulate the effect of widespread use on the environment of the community. Logically it follows that some community agency must provide the advice and encouragement needed to conserve the public health.

The Atomic Energy Commission, aware of this situation, has incorporated in its program of isotope distribution strict regulations governing utilization. But the rigid control system of the AEC, it must be remembered, governs only synthetic radioisotopes produced in nuclear reactors. X-ray machines, fluoroscopes and other equipment, naturally occurring radioactive materials, and isotopes from nonreactor sources are not included within the purview of the AEC. Those sources that are AEC-controlled are so numerous that the majority of users are never visited by commission representatives to see if, in fact, the requirements of safe use are met. Here, then, a wide area of responsibility exists for state and local public health agencies.

This brief review of radiological health is an attempt to demonstrate how favorable is our position to set up a well rounded control program based on the principles of public health administration.

In respect to ionizing radiation:

> We know what the sources are; we can find out where they are; we know how to measure the radiation; we know that radiation is injurious to the host, and know the order of magnitude of exposure he can bear without apparent appreciable harm; we know that distance and other protective barriers may be

interposed to reduce host exposure; and we know that any unnecessary exposure is excessive.

All the foregoing except the measurement of injury can be calculated and predicted with mathematical exactness.

In every health department worthy of the name there is the nucleus of a radiological health team. A physician can be made available from tuberculosis control where chest x-ray procedures are part of his armamentarium, or from cancer control where there is familiarity with therapeutic radiation, or from occupational health, which has as its foundation stone the concept of threshold limits. An industrial hygiene engineer or a sanitary engineer from environmental sanitation will soon learn to handle radiocontamination as one more factor in the work room or community environment. Short training courses, especially those conducted by the Public Health Service, will be of tremendous assistance in bringing the radiation team to top efficiency. The operating budget for this activity has already been described [13] and is so modest that it should be easily realized.

It would be to the advantage of the public health organization to have a register of qualified consultants or an advisory committee for planning and increasing the scope of activities. It has been our experience that university professors of physics, competent radiologists, and radiation specialists from industry are more than willing to make a contribution to the health and welfare of their community.

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Academic Preparation for Health Education

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Some of the unsolved problems of professional training in one of the more volatile areas of public health practice are critically examined here by the group most responsible for their solution. This report of the plan of attack upon the problems will be of wide interest.

As concrete evidence of its interest in the preparation of health educators the Association of Schools of Public Health appointed a committee in the fall of 1952.* Following a period of preparatory work, which involved the circulation of various questionnaires, a conference was held at the University of Michigan School of Public Health in Ann Arbor in September, 1954. About twenty people attended the conference, representing ten of the schools of public health in the United States and Canada. At the conference a number of questions were asked and attempts were made to find answers in so far as it was possible.

1. What are we doing now in the schools of public health in the professional preparation of health educators?

Material for tabulation was available from five schools. For admission all schools require at least a bachelor's degree, but the requirement in work experience varies from no experience at all to three years. Natural sciences are generally required for admission and social sciences are either required or must be taken later. The largest group of students come from official agencies and the second largest group from the school field.

In the schools of public health the required courses include public health administration, biostatistics, epidemiology, and environmental sanitation. Beyond these there is great variation in course requirements and electives for health educators.

2. What changes are taking place in public health which have significance for the future of public health education?

Ongoing programs are emphasizing chronic disease, aging, mental health, accident prevention, and industrial health. Opportunities are developing for health education in hospitals, health centers, and medical care programs. There is stress on the sociological, psychological, and anthropological dimensions of community work. The team concept is emphasized, as is lay participation in public health planning.

3. What attitudes have the schools of public health about the teaching of health education?

Professor Ira Hiscock summarized the report from the schools as follows: "From the observations possible, on the basis of reports from the several schools of public health, it is clear that the schools are interested in the teaching of health education, are critical of objectives and methods, and are constructive

* The Committee was composed of Dr. Ruth Grout, Dr. Granville Larimore, and Dr. Hugh Leavell, chairman. It was enlarged in 1954 by the addition of Dr. Mabel Rugen and Ann Haynes.

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as well as conservative. It would seem, from the comments received from the schools, that within their resources they will receive and act upon practical suggestions regarding the teaching of health with appreciation."

4. What is the status in schools of public health of health education training for members of the public health team other than health educators?

There is a wide range of practice. Six schools require health education of all graduate students. In the others, courses are available as electives.

5. What new fields are opening up for health educators?

The voluntary agencies, health councils, and medical care programs are quite promising. There is relatively little information about positions for health educators in schools and in teachers' colleges. A growing interest is apparent in finding individuals with combined training in health education and administration, and interest in the student health services of large colleges and universities.

6. What is the status and role of the health educator with an undergraduate degree in health education?

Fifty-six colleges and universities offer undergraduate programs, as do two schools of public health. There is very little joint planning between the undergraduate programs and the schools of public health which might lead to an academic sequence so that one might progress from the undergraduate program to the master's degree program in the school of public health without difficulty. It is evident that jobs are available for those completing undergraduate programs, and it was the consensus that such programs may be a quite important source of recruitment for schools of public health in the future.

7. What existing studies are there that attempt to correlate the needs of health educators working in the field with the training they have received in schools of public health? What studies need to be done in the future?

The Yale studies on public health personnel include some useful material about health educators. At the University of Michigan a study is determining the relationship between actual job performance of health education graduates from different schools and their professional preparation, as well as other factors. The New York State Health Department reported on its experience with training health educators. Of 21 who received stipends from New York State for preparation in schools of public health, only three are still employed by New York State. This report indicated that in the schools of public health there is "too much emphasis on the natural sciences, statistics, etc., and not enough emphasis on the social sciences, tools, and methods of health education."

Main Points

The Health Education Committee of the Association of Schools of Public Health, as a result of its own deliberations and those of the Conference at Ann Arbor, believes that the following six points should be stressed:

1. It is essential that we gain more accurate knowledge of the needs, current practices, and future potentialities of the field.

We need a careful appraisal of the over-all situation in health education, with thoughtful analysis of basic philosophy and of the position of health education in its professional development. We need a much sounder basis on which to plan our curriculums for health education in the schools of public health.

We need an analysis of present employment status of health educators working in official and voluntary agencies, including: (1) job description

and analysis; and (2) perception of both health educator and employer regarding adequacy of preparation for the job. (How the health educator perceives his present job, his future activities, and the training he received in a school of public health or elsewhere; and how others with whom the health educator works perceive the role of the health educator, his future activities, and the adequacy of the assistance they receive from him.)

Attitudes of employers toward the degree of training demanded for positions of different grades, including readiness to employ health educators at the first level need study (see item 3 below). Also, an attempt should be made to correlate the "personality" of the health educator with his success in various types of jobs, as well as an analysis of reasons for leaving the health education field.

Analysis is needed of the positions in health education, including when the position was created; reasons for its creation; the number of changes in personnel which have occurred during the life of the position; and information regarding relationship of such changes to professional preparation of the workers.

2. Greater consideration must be given to the importance of providing the health educator with a unique tool possessed to a lesser degree by most other members of the health team—special knowledge of the behavioral sciences and the tools and technics of health education.

A public health educator as the educational specialist on the health team: (a) serves as a consultant in educational methods, including the proper use of teaching tools; (b) stimulates more extensive and effective use of the educational approach by other members of the team; (c) helps to coordinate and plan the educational activities of the team; and (d) undertakes to extend the educational aspects of the health program to specific community groups and to the total community.

There are a number of problems at the present time that have apparently made it difficult to provide health educators with the unique kind of training they must have if they are to contribute to the work of the health team something which its other members do not have. We are dealing in many of the schools with a heterogeneous group of students. This differs somewhat from the past situation when many in training for health education already had a professional background in teaching or nursing. The problem has now arisen of actually developing a new type of professional health worker without, in a good many instances, any previous professional background upon which to build. Another problem is that programs for health educators leading to the master of science and master of public health degrees have become quite similar in many schools.

3. There is need for recognition of the fact that health education is actually being carried on at different levels.

The experience of the nursing profession in analyzing its personnel needs and problems may be useful in helping to unravel the problem in health education. It is evident that there are at least two levels at which health education is being carried on:

First Level—Workers at this level often, but by no means always, carry on specialized programs, such as chest x-ray projects; they may deal with materials; they may serve as aides to the executive secretary of a voluntary agency, etc. They usually require some kind of supervision, which may be available either locally or on a regional basis. They may have had training in a program which grants a bachelor's degree or they may be holders of the master's degree either from a school of public health or from some other type of institution. It is possible that this

first level personnel in health education may be compared with the public health nurse who has received her bachelor's degree and one year of specialized training in public health nursing.

Consultant or Supervisory Level—Workers at this level have a good deal of responsibility for consultation and supervision of other workers. They may well be holders of the M.P.H. degree with the broad type of team training which it encompasses. They obviously require a good deal of experience, as well as special training in consultative and supervisory technics.

4. There is need for adaptation of teaching to meet the needs of the field.

We must keep pace with the rapidly changing aspects of the broad fields of public health. We must learn to work with new teammates in such fields as education, welfare, community organization, agriculture, and industry. We must prepare workers for new fields, which are opening up for health educators, not only in voluntary agencies, medical care programs, school systems, etc.; but also in the international field where the contribution of the United States to health education might be quite unique; in the fields of teaching, including teacher training institutions, nursing education, medical schools, etc.; in the training of nonmedical administrators for various kinds of health department, voluntary agency, and medical care organizations; and for work in community organization of a broad type. We must determine the place of the schools of public health in the total professional development of the individual and also the place of other types of training institutions.

There must be a conscious and well directed effort to provide step-by-step progression in this complicated training program, which involves undergraduate education, schools of public health, field training areas, and inservice training. We must have carefully thought out criteria for entering the field, such as personality, intelligence, etc., and careful criteria for passing from one stage to the next.

5. There is need for further analysis of the health educational activities of members of the health team other than health educators and the training program needed to prepare for these activities.

6. There is need for further investigation to assist in recruitment.

We must learn more of the point at which people make up their minds to go into health education and of the factors which influence their decisions either one way or the other.

Conclusion

A broad study was recommended, so that some of the answers needed for a really intelligent approach to the training of health educators might be found. Such a study might well be directed by a special committee set up by the Association of Schools of Public Health, with an advisory committee representing other groups which are concerned with this problem.

Recent Trends in the Distribution of Physicians in Upstate New York

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The numbers and kinds of practicing physicians in any community will affect the nature of the public health administrative program. The make-up of the medical practitioner population in three especially favored areas is revealed here.

The University of Buffalo School of Medicine, with the aid of a grant from the New York State Department of Health, is engaged in a regional program of postgraduate education designed to improve the quality of medical care in the six counties of western New York. The program has two major aspects: postgraduate courses open to all physicians in the area and monthly clinical conferences conducted by faculty members in affiliated hospitals located in the smaller cities and communities in the region. The study reported upon here was undertaken as part of a general evaluation of our program. We felt that the long-term development of postgraduate education activities should take into account the changing trends in the number and types of physicians in the area and their distribution.

The source of our data is the Medical Directory of New York State, published by the Medical Society of the State of New York, for the years 1930, 1939–1940, and 1951. Originally, only the six counties of the Buffalo region were included, but the study was later expanded to include the 11 counties of the Rochester region and the 15 counties of the Syracuse region.

Urban—Rural Differences

The findings on urban-rural differences were essentially similar in the three regions and are presented in Table 1.

For the population as a whole, and for all urban communities, there was an increase in the physician-population ratio from 1930 to 1950. As a matter of fact, in 1950 the ratio of physicians to population was practically the same for all sizes of urban communities. The rural areas, however, not only started at a much lower level than the others but suffered a further decline during this period. (These rural areas do not include the suburbs of Buffalo, Rochester, and Syracuse.)

It is worth noting also that the rural areas actually gained some physicians between 1930 and 1940, but lost heavily in the next decade. Similarly, communities of 2,500 to 10,000 population lost physicians in the period from 1940 to 1950; the larger cities, however, continued to gain.

This tendency for rural areas to hold physicians in periods of economic depression and lose them in periods of

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Table 1—Number of Physicians per 100,000 Population in the Buffalo, Rochester, and Syracuse Regions by Size of Community, 1930, 1940, and 1950

Size of Community	1930			1940			1950		
	Pop.	No. Phys.	Phys. per 100,000	Pop.	No. Phys.	Phys. per 100,000	Pop.	No. Phys.	Phys. per 100,000
Under 2,500	933,631	643	68.9	986,282	709	71.9	1,121,229	598	53.3
2,500– 10,000	239,904	381	158.8	253,748	445	175.4	293,594	486	165.5
10,000– 50,000	501,297	700	139.6	494,535	793	160.4	538,455	924	171.6
50,000–100,000	152,122	195	128.2	156,338	259	165.7	171,546	287	167.3
100,000 and over	1,400,493	2,057	146.9	1,439,296	2,315	160.8	1,588,431	2,736	172.2
Total	3,227,447	3,976	123.2	3,330,199	4,521	135.8	3,713,255	5,031	135.5

prosperity was also indicated in the data obtained by Mountin and Pennell in their nation-wide study for the 15-year period from 1923 to 1938. In the period of prosperity, 1923–1931, the population in rural areas of the United States increased 5 per cent while the number of physicians was reduced more than 17 per cent. During the depression years 1931–1938, on the other hand, the rural population increased almost 6 per cent but the number of physicians was reduced only 2 per cent.[1] Our data, which carry the comparison through the forties, would seem to indicate that these are not chance findings. They suggest that we are dealing instead with one of the laws of the distribution of physicians in the United States, namely, that rural areas tend to lose physicians in periods of prosperity and to hold them in periods of depression.

An unexpected finding of our study relates to the age distribution of physicians. Our data show that while in 1930 rural physicians were considerably older than their urban colleagues, by 1950 the age distribution was essentially the same in rural areas and urban communities of all sizes (Table 2).

Perhaps this finding may be explained, at least in part, by the influx of new graduates into rural areas and small towns in the depression years; while 19 per cent of the physicians in rural areas in 1930 were out of medical school 10 years or less, in 1940 this proportion was 31 per cent; the corresponding figures for communities of 2,500–10,000 population were: 1930–15 per cent, 1940–29 per cent. Another important factor is the presence of a medical school at the center of each of the three regions; these provide a steady output of young physicians, many of whom are local residents. Finally, the generally favorable economic position

Table 2—Distribution of Physicians by Number of Years Since Graduation in the Buffalo, Rochester, and Syracuse Regions, 1930, 1940, and 1950

Size of Community	Percentage of Physicians											
	1930				1940				1950			
	No. Yrs. Since Grad.				No. Yrs. Since Grad.				No. Yrs. Since Grad.			
	0–10	11–30	31 +	Total	0–10	11–30	31 +	Total	0–10	11–30	31 +	Total
Under 2,500	19.1	32.0	48.8	100.0	31.3	27.8	40.9	100.0	14.7	55.3	29.9	100.0
2,500– 10,000	15.5	37.3	47.2	100.0	29.2	33.7	37.1	100.0	15.0	52.9	32.1	100.0
10,000– 50,000	23.1	42.3	34.6	100.0	24.6	44.1	31.3	100.0	14.2	57.5	28.4	100.0
50,000–100,000	25.6	44.6	29.7	100.0	25.1	50.2	24.7	100.0	15.3	59.9	24.7	100.0
100,000 and over	27.0	48.6	24.4	100.0	24.8	46.7	28.5	100.0	21.2	51.1	27.7	100.0
Total	23.9	43.5	32.6	100.0	26.2	42.2	31.6	100.0	18.2	53.5	28.3	100.0

of Upstate New York undoubtedly affects the ability of rural areas to attract and hold young and middle-aged physicians.

Whatever the explanation our data stand in sharp contrast to the findings of other studies. Mountin and Pennell noted that in 1938 rural physicians in the United States were considerably older than their urban colleagues and that this age gap had widened a good deal since 1923.[1] The Department of Commerce survey of the medical profession reported that in 1949, 22 per cent of the active physicians in rural communities were 65 years and older as compared with 11 per cent in this age group for active physicians in the United States as a whole.[2] Kaufman found that the median age of physicians in five rural counties in Missouri increased from 43 years in 1909 to 60 years in 1940.[3] According to Mangus 13 per cent of the physicians in the urban-industrial area of Ohio were 65 years and older in 1942 as compared with 28 per cent in the western agricultural area.[4] In Louisiana, Hyde reported that while only 14 per cent of the physicians in New Orleans were 60 years or older in 1942, this percentage increased inversely with the size of community, reaching a maximum of almost 40 per cent for rural communities.[5] Of the physicians in Mississippi in 1909, 10 per cent were over 60 years old, while 53 per cent were over 60 in 1945.[6]

Although our data are clearly at variance with the national pattern for age composition of rural physicians, there is no difference at all from the continued nation-wide trend toward fewer physicians in rural areas. In 1906 rural communities contained 53 per cent of the population of the United States and 41 per cent of the physicians; by 1929 they included 48 per cent of the population but only 31 per cent of the physicians[7]; and by 1940 they accounted for 43.5 per cent of the population but only about 20 per cent of the physicians.[8]

Our data indicate that the trend toward the disappearance of the rural physician is continuing not only in Missouri and Kansas, Louisiana and Mississippi, but also in New York, one of the richest states in the Union. While this phenomenon may affect a larger proportion of the people in more rural states like Missouri and Kansas, and is particularly evident in poor rural states like Louisiana and Mississippi, the decrease in the number of rural physicians must be recognized as a universal long-term trend, halting somewhat in depressions, speeding up in boom periods, yet continuing its downward course in rural areas throughout the country. The universality and the long-term character of this trend suggest that the difficulties which rural communities face today in their attempts to attract and keep physicians will become even greater in the future.

Growth of Specialization

Changes have taken place not only in the urban-rural distribution of physicians but also in their composition. For 1940 and 1950 we were able to obtain from the New York State Medical Directories information on the specialist status of physicians in the three regions studied. Physicians were classified as full specialists only if they were diplomates of a specialty board or had full specialty ("S") ratings from the Workmen's Compensation authorities. The results are shown in Table 3.

For the three regions as a whole there has been an increase of over 50 per cent in the proportion of physicians who are full specialists—this in a period of only 10 years. Moreover, the increase is not limited to the large metropolitan centers like Buffalo, Rochester, and Syracuse, but has occurred in communities of all sizes. In 1950 almost half the physi-

Table 3—Percentage Full Specialists by Size of Community, Buffalo, Rochester, and Syracuse Regions, 1940 and 1950

Size of Community	Percentage Full Specialists	
	1940 Per cent	1950 Per cent
Under 2,500	2.5	6.4
2,500– 10,000	9.2	21.8
10,000– 50,000	25.3	37.7
50,000–100,000	29.7	44.2
100,00 and over	29.1	45.1
Total	22.3	36.8

cians in the cities of over 50,000 population were full specialists, while almost two-fifths were full specialists in cities of 10,000–50,000. But specialization has reached down even further. In the smallest urban communities, those with a population of 2,500–10,000, the proportion of full specialists rose from less than a tenth in 1940 to over a fifth of the physicians in those communities in 1950. In rural communities there was also an increase, but the percentage of full specialists remained quite low in comparison with the urban communities.

What is the general significance of these findings? Despite certain evils of specialization which have received a good deal of attention in recent years, we believe that the growth of specialization has been a most important factor in improving the quality of medical care. The fact that considerable specialization has now occurred even in smaller urban communities means that some of the differential in the quality of available medical resources between the large cities and the smaller centers is being diminished. And this, too, is a most desirable trend.

The narrowing of the gap between the teaching centers and the smaller cities has particular significance for those of us who administer regional programs of postgraduate education. Our own program, for example, gears its postgraduate courses to the needs of general practitioners. The changing composition of the physician population requires that sooner or later we must shift our emphasis if we are to meet the needs of the physicians in our region.

Distribution Within the Large Cities

While there has been considerable study of urban-rural differences in physician distribution—largely because of rural needs and pressures—very little attention has been paid to the distribution of physicians within large cities.

We have taken our three large cities —Buffalo (population 580,000), Rochester (population 330,000), and Syracuse (population 220,000) and divided them each into four different areas. The first is what we have called the "physicians' area," or the area of concentration of physicians—the local equivalents of London's Harley Street and New York's Park Avenue. The other three are high.

Table 4—Percentage Full Specialists in Specified Areas of Buffalo, Rochester, and Syracuse, 1940 and 1950

Area	Percentage Full Specialists					
	Buffalo		Rochester		Syracuse	
	1940	1950	1940	1950	1940	1950
Low Economic	13.9	24.7	10.6	24.2	5.9	11.6
Middle Economic	12.8	28.2	7.8	26.3	13.8	36.8
High Economic	17.1	34.1	23.2	34.8	15.6	33.7
Physicians'	48.3	66.2	49.2	69.3	52.9	68.4
Total	28.6	46.6	29.7	48.6	33.2	50.0

middle, and low economic areas, determined on the basis of median monthly rentals of the neighborhoods delineated by the Council of Social Agencies in each city. In each instance the physicians' area has been treated as a separate entity on the assumption that the physicians in these concentration areas serve the city as a whole rather than their immediate neighborhood. In Buffalo the physicians' area is located in the high economic area of the city; in Syracuse, in the low economic area; in Rochester, however, it includes contiguous portions of the low, middle, and high economic areas. In each city the physicians' area is excluded from the calculations for the three economic areas.

There was a rapid growth of specialization in the three cities from 1940 to 1950; almost a third were full specialists in 1940 as compared with about half in 1950. In the physicians' areas the proportion who were full specialists increased from a half to two-thirds during this decade. Increases occurred in all economic areas of the cities; however, the low economic areas lagged somewhat behind the others in this respect (Table 4).

During the 20-year period, the ratio of physicians to population increased in each of the three cities for the city as a whole, for the physicians' area, and for the middle and high economic areas. But the reverse was true for the low economic area; in Rochester, the ratio of physicians to population decreased by 7 per cent in this area, in Syracuse by 14 per cent, and in Buffalo by 24 per cent from 1930 to 1950 (Table 5).

Table 5—Physicians per 100,000 Population in Specified Areas of Buffalo, Rochester, and Syracuse, 1930, 1940, and 1950

	Buffalo								
	1930			1940			1950		
Area	No. Phys.	Pop.	Rate per 100,000	No. Phys.	Pop.	Rate per 100,000	No. Phys.	Pop.	Rate per 100,000
Low Economic	246	228,702	107.6	237	224,288	105.7	178	216,676	82.2
Middle Economic	179	202,703	88.3	188	201,815	93.2	181	198,025	91.4
High Economic	142	94,735	149.9	158	101,957	155.0	217	111,637	194.4
Physicians'	338	46,936	720.1	420	47,841	877.9	509	53,794	946.2
Total	905	573,076	157.5	1,003	575,901	174.9	1,085	580,132	187.2
	Rochester								
	1930			1940			1950		
Area	No. Phys.	Pop.	Rate per 100,000	No. Phys.	Pop.	Rate per 100,000	No. Phys.	Pop.	Rate per 100,000
Low Economic	109	113,399	96.1	104	108,406	95.9	91	102,486	88.8
Middle Economic	86	96,088	89.5	90	94,750	95.0	99	99,218	99.8
High Economic	91	90,219	100.9	151	95,285	158.5	187	102,955	181.6
Physicians'	232	25,327	916.0	254	26,534	957.3	339	27,829	1,218.2
Total	518	325,033	159.4	599	324,975	184.3	716	332,488	215.3
	Syracuse								
	1930			1940			1950		
Area	No. Phys.	Pop.	Rate per 100,000	No. Phys.	Pop.	Rate per 100,000	No. Phys.	Pop.	Rate per 100,000
Low Economic	59	58,731	100.4	51	53,119	96.0	43	50,008	86.0
Middle Economic	75	75,792	99.0	80	75,692	105.7	95	79,620	119.3
High Economic	57	50,727	112.4	64	55,270	115.8	89	68,370	130.2
Physicians'	199	22,972	866.3	208	20,663	1,006.6	237	21,947	1,079.9
Total	390	208,222	187.3	403	204,744	196.8	464	219,945	211.0

We thought that the loss of physicians from the low economic areas, which occurred primarily in the decade from 1940 to 1950, might be balanced by an influx of osteopaths and chiropractors. This was studied for the city of Buffalo, and it was found that the osteopaths are located almost entirely in the upper economic and physicians' areas; the chiropractor-population ratio is much smaller in the low economic area than in the others and remained stationary from 1940 to 1950 while increases occurred in the middle and high economic areas. We also believed that the loss of physicians might be balanced by hospital outpatient departments, but in Buffalo these showed a considerable decline in the number of visits from 1940 to 1950.

Our findings for the neighborhoods of the three cities provide a striking parallel to Mountin and Pennell's finding that from 1923 to 1938 those counties with an annual per capita income below $600 suffered a decline in the physician-population ratio—with the greatest decline occurring in the poorest counties—while the ratio increased in counties with a per capita income above $600.[9] Mountin and Pennell concluded that "wealth is a dominant factor in the maintenance of high physician-population ratios" although allied factors, such as degree of rurality and availability of hospital facilities also played a role.

In our data there appeared to be a relationship between the rate of decline in the physician-population ratio and the presence of hospital facilities. In Rochester where 34 per cent of the general hospital beds were located in the low economic area in 1950, the decline in the physician-population ratio for this area was only 7 per cent for the 20-year period; in Syracuse, where the low economic area had 23 per cent of the beds, the decline was 14 per cent; but in Buffalo, with only 11 per cent of the city's general beds located in the low economic area, the decline in the physician-population ratio was 24 per cent. It is worth noting that these data for the three cities are quite similar to Mountin and Pennell's finding that from 1923 to 1938 the physician-population ratios for the poorest counties in the United States declined by 7 per cent in counties with 250 or more general hospital beds, by 26 per cent in counties with less than 250 beds, and by 33 per cent in counties with no general beds.[9]

The widening gap in physician-population ratios between low and high income areas of large cities is apparently a recent phenomenon, at least in the three cities studied. In 1930 the differences were not very great and the low areas even had slightly better ratios than the middle income areas. For the counties of the United States, on the other hand, Mountin and Pennell found the differences by income class of county already well established by 1923.

One would expect that the loss of physicians from the low income areas of the three cities would have occurred in the thirties, when depression and unemployment presented severe problems for the people in these areas and in turn for their physicians. But this is not the case. There was little or no decrease in the physician-population ratio from 1930 to 1940; practically all of the decline occurred during the forties, a period of prosperity and full employment. This is exactly comparable to the situation described previously in this paper for the rural areas, which also tend to hold physicians in depression years and lose them in boom periods. We have no ready explanations for this phenomenon; one may speculate that the war was a factor in the changes from 1940 to 1950 because it uprooted physicians and made it easier for them to relocate, but data to measure its importance were not available.

It would be of interest to study the

situation in other large cities in order to learn whether the decline in the number of physicians in low income neighborhoods is a general phenomenon and to determine the periods in which such declines occurred.

Summary

This is a study of the changing distribution of physicians in the Buffalo, Rochester, and Syracuse regions of New York State during the period from 1930 to 1950.

The physician-population ratio in rural areas, which started at a much lower level than in urban communities, declined by 23 per cent from 1930 to 1950, while the ratio for urban communities increased by 18 per cent during the same period. This finding is consistent with long-term national trends; its occurrence in New York State, one of the richest in the nation, emphasizes the universal character of the tendency toward disappearance of the rural physician.

The loss of rural physicians was halted in the 1930–1940 decade, occurring primarily in the period from 1940 to 1950. These data are consistent with other previous findings and indicate that rural areas tend to hold physicians in depression years and lose them in periods of general prosperity.

The age distribution of rural physicians was more favorable in 1950 than in 1930. This is in sharp contradiction to the findings of all other studies; it may perhaps be explained on the basis of the favorable economic position of the state and the existence of a medical school at the center of each of the three regions.

From 1940 to 1950 there occurred a marked increase in the proportion of physicians who are full specialists. This increase, which occurred in communities of all sizes, is considered to be a significant factor in raising the quality of medical care in urban communities in these regions.

Within the cities of Buffalo, Rochester, and Syracuse, the physician-population ratio decreased in the low income neighborhoods and increased in the middle and high income neighborhoods. As in the rural areas, this decrease did not occur in the depression period but rather in the prosperous decade from 1940 to 1950. The dominant influence of per capita income on physician-population ratios, shown in macrocosm by Mountin and Pennell for the counties of the United States, is indicated here in microcosm within the boundaries of the three cities studied.

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Dimensions of Population Mobility and Change

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Turbulent would seem to be a fitting adjective to describe the fluid state of our nation's population as it is pictured in this broad statistical report. Some of the public health implications are underscored.

For the purpose of this paper the term, "mobility," is considered to refer to physical change of residence from one location to another. The movement may be from one street to another within the same city or it may be from one part of the country to another part. The term, "change," is considered to refer to alterations in the distribution of characteristics of the population. It is not feasible, to attempt to cover adequately all the movements and changes having some public health significance. Therefore, attention is directed primarily to those developments that have major implications.

One further qualification should be mentioned. In assaying the significance of population changes it is important to consider future developments as well as those that have already occurred. Therefore, reference is made to the most recent Bureau of the Census projections of the United States population by age.* However, there is an obvious hazard involved in predictions involving human affairs. The most dramatic proof of this is given by the rise of the birth rate—an event of major importance which was foreseen by few if any demographers 15 or even 10 years ago. The downward trend of the death rate has been relatively regular during recent decades, and it is reasonable to expect it to continue to be so for some time. However, it is still possible for unexpected changes to occur—and they could be in either direction.

The total population of the United States (including the Armed Forces overseas) increased by about 19.5 million, or nearly 15 per cent, between 1940 and 1950. About 1.8 million of the increase between 1940 and 1950 was due to the net excess of immigrants from other countries; the remainder, 17.7 million, was due to the excess of births over deaths. From 1950 to 1955 the population has increased by another 13.6 million persons. About 1.5 million of this increase has been due to net immigration and the remainder, about 12 million, represents the excess of births over deaths. These are the largest absolute (but not relative) increases during comparable time intervals in the history of the country. During the 1930–1940 decade the rise was only about nine million or 7 per cent.

The rise in the total population was not, of course, shared equally by all areas. The differences between areas in rate and amount of growth have been large. The effect of population growth on the need for public health and other social services varies similarly. Thus, while the northeast, northcentral, and southern regions increased about 10, 11, and 13 per cent, respectively, between 1940 and 1950, the West gained 41 per

* The Bureau of the Census is the source of all population data used in this paper.

cent in population. This regional pattern of growth has continued since 1950 with the western area gaining 14 per cent between 1950 and 1954. The variation is greater for individual states. Between 1940 and 1950 four states showed small losses of population, while six states, all in the western region except Florida, gained over 35 per cent.

Of the 3,103 counties, almost half had fewer people in 1950 than in 1940, the loss being 20 per cent, or more, for 188 counties. On the other hand, there were 520 counties which gained 20 per cent, or more, and 32 gained 100 per cent, or more. Even in the states showing large increases in total population, a surprising number of counties showed decreases. The great majority of large- and medium-size cities gained population and 19 cities of 25,000, or more, population gained 100 per cent, or more. But there were also 37 cities of this size that had fewer people in 1950 than in 1940. The main point to be noted here is that, while it is necessary to recognize the major trends, it is also important, for analytical or administrative purposes, to investigate the variations. This becomes obvious when population data are to be used in program planning for specific areas.

One of the outstanding characteristics of the American population during the past 15 years has been the volume of internal migration. In general, the predominant direction of the movement has been to the Far West, to the Gulf Coast, to Florida, to the Great Lakes industrial area, and to the Middle Atlantic coastal areas. In-migration of people to five western states and to Florida between 1940 and 1950 represented 20 per cent, or more, of the populations of those states in 1940. In contrast, most Midwestern and Southern states had a net out-migration. Eleven states in these areas lost 10 per cent, or more, of their 1940 populations by net outmigration in the 1940–1950 decade. This pattern of movement has continued from 1950 to the present time.

Examining this movement more closely it appears that it was predominantly from rural to urban areas, and within the urban areas, to the suburban communities surrounding the larger cities. This is not a new phenomenon, as every census after 1820 has shown greater growth of the urban population than the rural. The 1930–1940 decade came closest to interrupting this long-time trend when the depression induced a large-scale movement back to the farms and small towns.

While the urban population gained over 19 per cent between 1940 and 1950, the rural increased about 8 per cent. But this indicates only part of the difference. All the rural gain occurred in the nonfarm areas and there it was over 43 per cent. The rural farm population, however, declined nearly 24 per cent. The farm population has declined further by about 12 per cent between 1950 and 1955.

The figures for total urban population also conceal a significant difference. The 168 standard metropolitan areas had a total population in 1950 of over 84 million people which was 22 per cent above their population in 1940. However, while the central cities of these areas gained 14 per cent during the decade, the parts of the areas outside the central cities, chiefly the suburbs, gained over 35 per cent.

There was a difference in the rate of change for the two groups—white and nonwhite—which would seem to have

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significance for public health programs. Whereas the white population in urban areas increased 17 per cent from 1940 to 1950, the nonwhite increased 44 per cent. The smaller total population gain in rural areas was entirely due to the whites which gained 10 per cent, whereas the nonwhite population decreased by 8 per cent. Furthermore, within the general urban classification, the nonwhite population increase was proportionately greater (48 per cent) in the central cities of the metropolitan areas than in the parts of these areas outside the central cities (32 per cent). In contrast, the white population increased proportionately more in the suburban areas outside the central cities—only 10 per cent in the central cities compared with 36 per cent in the surrounding areas. In general, there was a significant migration of the nonwhite population from the southern to the northern, midwestern, and far western areas of the country.

The net changes in population over a decade of time do not measure the total amount of population movement. They represent only the balance of out- and in-migration, and of births and deaths at the end of 10 years. A better index is given by statistics of place of residence in one year compared with place of residence in the preceding year. In 1950, 17 per cent of the population of the United States were living in a different house from that occupied in 1949. In the western region the recent movers represented 24 per cent of the population. Continuation of this rate of movement would mean that the equivalent of the entire population would move once every six years.

About two-thirds of the movers went to another place in the same county and one-third moved to another county in the same state or to another state. About two and one-half per cent of the entire population moved to another state in one year. Over a 10-year period this rate would mean that one-fourth of the population would change their state of residence.

One other type of population mobility is of interest. Many persons spend their working hours in a county, city, or even another state than that in which they live. A sample survey made as of September, 1954, by the Bureau of the Census indicated that about 14 per cent of employed persons worked in a different county than their county of residence, and 3 per cent worked in a different state. In the construction, manufacturing, transportation, and wholesale trade industries, the proportion working in a different county was 20–25 per cent.

What is the public health significance of these large-scale population movements—from rural areas to urban, the rapid growth of suburbs, migration from certain regions of the country to other regions, and frequent changes of residence within cities and counties? The actual or the potential problems differ somewhat for rapidly growing areas and for static or declining areas.

The rapidly growing area is faced with the necessity of expanding its hospital, clinic, nursing, and sanitation services. Time and large-scale financing are required. It is frequently difficult to convince local governing bodies, dominated by long-time residents, that programs of the necessary magnitude should be undertaken. Also, the newer residents are unfamiliar with the community's problems and may not participate actively in making the necessary decisions. In some cases the new residents bring with them certain health problems that were not previously present to a significant extent.

The movement to the suburbs, usually involving the higher income residents of the central cities, may create problems of maintaining necessary health services for the population remaining in the city. This represents a hazard not only to the continued provision of

health services to the residents of the city, but also to the health of the many suburban residents who work in the city.

The rural areas, many of which have never had adequate health facilities and services, may find it even more difficult to support them in the face of a declining population. This may affect particularly the services for children. In 1950, 42 per cent of the rural farm population were under 20 years of age compared with 31 per cent of the urban population.

Of the various changes in the composition of the population, two stand out for their impact upon public health and other social services. They are the sharp rise in births and number of children and the rapid increase in the numbers of older people.

During the 10 years (1945–1954) about 36,800,000 babies were born alive in the United States compared with 26,400,000 in the preceding 10 years. This represents an average increase of over one million births per year. There are now (1955) about 18 million children under five years of age compared with about 16 million in 1950, and only ten and one-half million in 1940—or an increase of almost 75 per cent since 1940.

The future trend of births and, therefore, the number of young children is, of course, uncertain. But there is reason to believe that there will not be a sharp decline in the number of births during the next decade.* The number of women entering the child bearing period will begin to increase about 1960 and rise thereafter. If the age-specific birth rates continue at or near recent levels, there would, by 1975, be four and one-half to five million births per year, and the number of children under five years of age would be in the neighborhood of 24 million, or about one-third more than at present.

The number of children and young persons aged five to 19 years remained practically unchanged (about 35 million) between 1940 and 1950. Due to the increase in births, there are now (in 1955) almost 42 million, a rise of about 19 per cent. By 1960 the number in this group will be almost 50 million, over 19 per cent more than in 1955. If the birth rate continues near recent levels, there will be about 60 million by 1975, or about 40 per cent over 1955.

As was noted with respect to changes in the total population, there is significant variation between areas in the rate of increase in the child population. Whereas the under five years group increased about 53 per cent between 1940 and 1950 for the entire country, it rose more than 100 per cent in the western region. The rise for urban areas was about 76 per cent, and for rural nonfarm (including suburban) areas, about 88 per cent. In contrast, the number of young children in rural farm areas actually declined about 13 per cent. These differences are due to the heavy migration to urban areas and to the fact that a large proportion of the migrants were young adults in the reproductive age period.

The effects of this tremendous increase in babies and children upon the demands for services are not difficult to see. They have become most obvious, perhaps, in the educational field. The number of children enrolled in elementary schools is now (in 1955) about 40 per cent greater than in 1940. It is almost certain that by 1965 the number will be about 20 per cent greater than at present. The wave of additional children is just beginning to reach high school age. By 1965 high school enrollment will be about 50 per cent

* The population projections which are cited in the following paragraphs have been prepared by the Bureau of the Census. The particular projection used here is that which assumes that the fertility level of the years 1950–1953 will continue to 1975.

higher than in 1955. The colleges will feel the full impact in the 1960's and 1970's.

It seems clear that similar increases have occurred and will continue in needs for many public health services—prenatal care, well baby clinics, and school health services. More productive programs devoted to prevention of serious accidents, which is the leading cause of death among young people, and greatly expanded mental health facilities would seem to be imperative.

The increase in the birth rate since 1940 was shared in varying degrees by all birth orders up to and including the sixth and seventh child. Between 1940 and 1953 the rates (per 1,000 women aged 15–44 years) increased 14, 62, 100, 86, 54, and 15 per cent, respectively, for the first, second, third, fourth, fifth, and sixth, plus seventh births. It will be noted that the largest relative increases occurred for third and fourth births. This represents a reversal of the decline in formation of medium-size families which had occurred for several decades prior to 1940. Births of eighth and higher order are continuing the gradual decline which began long ago.

The 1950 census data and special fertility tabulations for 1950 and 1940, made by the Bureau of the Census, show that the proportions of women who have never married and the proportion of ever-married women who are childless have declined significantly. In 1940, 35 per cent of the women between the ages of 15 and 44 had never been married; in 1950, the proportion was 25 per cent, and it is even lower now. Of the women in this age group, in 1940, who had ever been married, 26 per cent had borne no children, compared with 22 per cent in the same age group in 1950. The differences in fertility between 1940 and 1950 are even larger in the group between ages 20 and 34. Thus, there are fewer unmarried persons, more families, fewer childless families, and more medium-size families. These developments affect the proportionate needs for the various categories of public health and social services.

The number and proportion of older people in our population have been steadily increasing for many decades. This has been due to the decline of the death rates—which has increased life expectancy—and to the long-time fall of the birth rate until about 1935. Life expectancy at birth increased from 47 years in 1900 to 69 years in 1953. In consequence, the number of persons 65 years and older increased fourfold in numbers, and from 4 to over 8 per cent of the population during this period. It can be anticipated that the number will rise about 50 per cent between 1955 and 1975, when there will be about 21 million persons in this age group, over 9 per cent of the population, compared with slightly over 14 million at the present time (1955).

It is well established that older people require considerably more medical and health services than do all others except the very young. The increase in numbers of aged, combined with occupational changes and rapid urbanization, has already focused the attention of health and welfare agencies on their problems. The needs in this area will surely be even greater in the future.

This brief survey of a few important population changes has omitted consideration of others which also have definite implications for public health. Among them are: The gradual fall of the male-female population ratio due to more rapidly declining female death rates; the increased proportion of women in the labor force; the occupational shift from unskilled labor to old and new types of skilled or semiskilled work; the steady rise in the average educational level of the population; and the increased income of the people, particularly of those in the lower income groups.

Arthropod-Borne Encephalitides in Japan and Southeast Asia

MAJOR EDWARD L. BUESCHER, MC

It is likely that the report of this unusual investigation will be followed with interest—regardless of the reader's particular professional concern—and that it will leave him with a heightened regard for the essential ingeniousness of scientific research.

The arthropod-borne, viral encephalitides, specifically Eastern, Western, and Venezuelan equine encephalitis, and the St. Louis, Japanese, Murray Valley, and Russian spring-summer encephalitis, are a group of clinically and epidemiologically related infections which are distinguished from one another chiefly on immunologic and geographic grounds.

The results of hemagglutination-inhibition tests show that the viruses causing these diseases, as well as certain other insect-borne agents, may be classified into two broad groups, designated A and B by Casals and Brown.[1] The geographic distributions of these viruses do overlap somewhat, viz., St. Louis and the equine encephalitides in this country and Japanese and Russian spring-summer encephalitis in northeast Asia.

Historically, knowledge of these diseases began with the clinical and pathologic studies which defined them as central nervous system infections and was extended by virologic and epidemiologic investigation which established the nature of the infectious agents and their mode of transmission. Epidemiologic studies of several of these diseases, including Japanese encephalitis (JE), revealed that a wide variety of vertebrate and invertebrate hosts are infected in nature. Such observations raise the question of where man and the other hosts fit into the picture. The work to be presented here deals with the ecology of JE virus and follows logically from the extensive earlier work of both Japanese and American investigators. This report is a summary of the efforts of the scientific staff of the 406 Medical General Laboratory in Tokyo. Much of it remains to be published formally, but the data in epitomized form are given in the Annual Reports of that laboratory for the years 1950–1954.

JE in the main islands of Japan is a seasonal disease limited to the months of August and September. Human epidemics have occurred at irregular intervals in various parts of Japan, but outbreaks involving a thousand or more cases appear in metropolitan Tokyo (which includes rural as well as crowded urban areas) every second or third year.[2] Encephalitis in the domestic animals of rural areas was frequently observed simultaneously with the occurrence of human disease in nearby cities. The close association of epidemic disease with the seasonal abundance of culecine mosquitoes suggested to Japanese epidemiologists in the early 1930's that the encephalitis was mosquito-

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borne. In succeeding years Mitamura and his associates recovered JE virus from several culecine species,[3, 4] including Culex tritaeniorhynchus Giles. Moreover, in 1948 Hammon, et al., reported the isolation of the virus from C. tritaeniorhynchus collected in Okayama.[5]

In recent years studies of the Army group in Tokyo demonstrated that of all suspected species C. tritaeniorhynchus is the sole vector in the Tokyo area (and probably in all Japan as well). Moreover, these workers found that outbreaks of human or animal encephalitis first appear well after peak numbers of these particular mosquitoes have been attained in the environment. Further, the occurrence of clinical encephalitis tended to parallel the frequency with which virus was detected in these mosquitoes. Thus, when mosquito infection rates were high more overt disease was observed than in seasons when mosquito infections were minimal.[6] Sometimes infections occurred in horses and pigs without involvement of human beings[7] and, conversely, epidemics were encountered without associated epizootics.

The source of JE infection for the culecine mosquito was unknown when the present ecologic studies were begun. However, it was known that C. tritaeniorhynchus in Japan was a strictly seasonal mosquito, being present in the Tokyo area only for five-eight weeks beginning about mid-July.[6] During this short interval the population increased rapidly to peak about the first week in August and declined as quickly. In these few weeks C. tritaeniorhynchus acquired, propagated, and transmitted its infection. Virus was rarely detected in them until after their peak population was attained, but thereafter was demonstrated frequently. This suggested that the mosquito population was seeded with virus very rapidly and almost simultaneously over a wide area.

When this question came to serious study in 1952 man and his domestic animals seemed unlikely sources for the rapid, mass, mosquito infection. Most of the human and domestic animal populations were immune to JE; hence, very few were capable of developing the viremia which could serve as a source of infection for mosquitoes. Attention was therefore directed to certain of the Japanese wild birds which in earlier studies by Hammon and his associates[8] had presented serologic evidence of previous experience with JE virus. Birds were particularly appealing as potential sources of mosquito infection because they are short-lived and prolific. Thus, there was a rapid turnover of population with large numbers of new susceptibles each year. In addition, viremia of two- to five-day's duration consistently followed experimental infection of a variety of recently hatched wild and domestic birds. Hence, birds seemed to provide a reasonable source for infection of large numbers of mosquitoes.

Such observations as these prompted a search for naturally occurring viremia in the nestlings of a heron-egret rookery near Tokyo. Begun in 1952 the birds and mosquitoes of this rookery were studied for infection at regular intervals throughout the summer of each year. The resulting data show that both birds and mosquitoes of such a habitat were infected simultaneously in early August each year. Moreover, the frequency of mosquito infection tended to parallel that of the nestlings. Thus, in 1952 when active infection was experienced by many of the rookery's herons (but not the egrets) virus was recovered from mosquitoes almost daily during the same interval (July 29–August 11). The following year heron infection was not demonstrable. Instead virus was recovered from a single egret, and mosquito infection was correspondingly less frequently detected than in the preceding year.[9]

An explanation for the selective in-

fection of herons in 1952 was suggested by the feeding behavior of the vector mosquito in the rookery. Both direct observation and controlled experiments with bird-baited traps in the field showed that herons attracted 10 to 20 times more C. tritaeniorhynchus than did egrets. Thus, even though nestling egrets were as abundant as were young herons during this year in the rookery, the species most frequently infected was that with the greater mosquito attack rate. It should be emphasized that in 1952 the vector mosquito had ample opportunity both to acquire and to further transmit virus to these birds.

The selective biting behavior of the vector would not explain the failure to demonstrate heron infection in 1953. The absence of heron infection and the over-all low incidence of avian infection that year might be attributed to the high incidence of immunity in the nestling population. Thus, the majority of heron nestlings hatched throughout the summer of 1953 possessed neutralizing antibody to JE virus. This occurred long before virus was detected in mosquitoes. Only 28 per cent of the egret nestlings had this neutralizing substance that year. Further study showed that this antibody was transovarially transmitted from the parent hen and that such passively immunized young birds failed to develop viremia when inoculated in the laboratory with JE virus.

These careful observations of avian viremia in a single rookery cannot be extrapolated to embrace infection of the bird population of Tokyo. Nevertheless, preliminary data obtained in 1954 and 1955 in other areas suggested that the findings were representative for the Tokyo area. Further, other adult birds living in different habitats (cormorants, magpies, thrushes, bulbuls) had as high an incidence of neutralizing antibody as did the herons of the original rookery. It seemed logical to postulate that certain wild birds played a significant role in the rapid seeding of the vector population with virus in the Tokyo area. Added weight for this hypothesis, and against that of domestic animals being of importance, was the absence of epizootic disease in the Tokyo area in recent years.

It is possible at the present time only to speculate upon the relationship of these observations to the occurrence of JE in man. In the years 1952–1953 avian and mosquito infection preceded by two- to four-weeks the peak occurrence of human encephalitis in Tokyo proper. The incidence of human disease paralleled the frequency of bird-mosquito infection being highest in 1952 when infection in the lower forms was most frequently demonstrated.

The mechanism for the perpetuation of virus from one season to another is unknown, but there are many interesting possibilities which deserve further study. Thus, virus might overwinter in hibernating mosquitoes. Or, an auxiliary infection cycle involving birds and their endoparasites, similar to that of the lungworm and pigs in the ecology of swine influenza [10] might be operative. It is conceivable that the hormonal stress experienced by actively ovulating birds might in some way reactivate latent infection with a recurrence of viremia which could then initiate the nestling infection cycle. Finally, the potential of infected birds carrying JE virus during migration must be considered. The spring migratory flight northward is composed exclusively of adult birds; adult birds are extremely resistant to experimental infection with JE virus and rarely develop viremia unless overwhelmed by massive inoculation.[11] The possibility of viremic adult birds seeding areas in their spring migration northward is therefore remote. On the other hand, because widespread dissemination of virus in young birds occurs just prior to the fall migration, the possibility exists of migrating

viremic juveniles carrying virus south. It is apparent that careful study is indicated on the problem of overwintering JE virus.

In conclusion, it may be noted that none of the concepts tested in this work were entirely new. However, older ideas resulting from investigation of other arthropod-borne viruses in different geographic areas have been successfully integrated with careful observation of JE virus in the field. This approach has implicated wild birds in the ecology of JE. Moreover it led to the hypothesis that this avian infection serves as the most likely source for the widespread rapid seeding of the C. tritaeniorhynchus with virus in Japan.

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Alabama Association Organized

The Alabama Public Health Association was organized at an initial meeting on March 2. It began life with 111 members, nearly two-thirds of whom are members or Fellows of the American Public Health Association. This new association hopes to qualify for APHA affiliation.

Officers elected are:

President—D. G. Gill, M.D., state health officer
Vice-Presidents—Glenn H. Baird, M.D., professor of preventive medicine, University of Alabama Medical Center, Birmingham
Margaret Cotton, executive secretary, Alabama Heart Association
Secretary-Treasurer—Elizabeth Kelly, personnel technician, State Health Department.

City of the Future—A Public Health Engineering Challenge

MORRIS M. COHN, Sc.D., F.A.P.H.A.

It is good for us, once in a while, to be jogged out of our preoccupations with minutia of our daily jobs. Here is an antidote for professional myopia.

These are days for men of vision. This is the time for the imagination to visualize what the future holds and for the courage to achieve unheard of goals. These are intoxicating days when the "impossible" can be safely predicted—with the assurance that the only impossibility is trying to prevent the "impossible" from happening!

Time was when an imaginative predicter was labeled as an impractical visionary—now he is called a "long-range planner." Now his opinions are looked upon as a challenge to make his predictions come true. Five hundred years ago, long before airplanes, submarines, movies, and world-wide wars, they must have stoned the prophetic soul who chiseled this reported prediction on a tombstone in the churchyard at Kirby, Essex, England:

> When pictures look alive with movements free,
> When ships like fishes swim beneath the sea,
> When man, outstripping birds, shall scan the sky,
> Then half the world deep drenched in blood shall lie.

Not so today. Even the predicters of doom—who gaze into the blackness of their crystal balls and see the end of mankind as a result of a chain-reaction of destruction—have ardent followers. It is reassuring, then, that long-range planners who see a better world in the future also are staunchly supported because we can build a finer future on their predictions.

Intoxicating Possibilities

There are, indeed, intoxicating possibilities for making America a land of such great progress that this finer future will rub off on other nations with whom we have contact. The greatness of the future dwarfs the imagination and the predictions of long-range planners are materializing about as rapidly as the predictions come off the end of the crystal ball production line.

No longer does the "visionary" have a franchise on Buck Rogers' dreams. Men of great substance are looking into the future and organizations of the most creditable stature are unashamedly spelling out the 1975 scene. Pick up a newspaper, turn the pages of a magazine, listen to a luncheon or dinner speaker, and you may hear forecasts which challenge the imagination—backed up by the will to convert these dreams into realities. The comparatively peaceful climate in which we now find ourselves has spawned a new crop of planners and their plans. They demonstrate that even in an era of a Cold War beating some of the swords into ploughshares gives man time to plan construction rather than destruc-

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tion. Our hopes for the future seem to be inevitably tied to the present.

Twelve years ago, speaking before the Ohio Conference on Sewage Treatment, I said, "Postwar planning certainly needs no apology in the light of the jutting jaw of Mussolini, which has suddenly become quavering, and the vertical cities of Nazi Germany which have become amorphous masses of horizontal rubble, and the rising sun of Japan, which is rapidly sinking into the Pacific. Men are beginning to dream of the days after victory—and do not be surprised to learn that this American dream of peace is composed of mountains of buttercrunch ice cream, overflowing tanks of high-test gasoline, three cups of breakfast coffee, and a dozen pairs of nylons—as well as thousands of new sewage treatment plants.

"The sweating soldier in the Solomons fights for the right to get home so that he can eat double-dipped cones to his heart's content; the man at the lathe dreams of an auto trip for any distance he wishes, anywhere he wants to go, and at any time he gets the whim, without OPA regulations; the housewife hopes for enough butter to fry enough steaks to go with enough coffee to fill the rationing void; the young woman dreams of a peace that means sheer nylons and six pairs of shoes to go with six ensembles.

"Visionaries may conjure up frothy dreams of a ginger-bread world in the future, with rose-covered cottages instead of slums; with parks in every plaza; with two helicopters on every roof; with plastic trains of unbelievable speed and comfort; with air-conditioned, portholeless ocean liners that will carry us to England and back in a few days; with fantastic rocket ships that will catapult us from New York to San Francisco in time for lunch; with automobiles that will do everything but talk; with new fabrics; new sudsless soaps; new drugs and chemicals; new synthetic rubbers and processed woods; with dimensional television bringing the world into our homes."

Well, that was 11 years ago and have not some of these fantasies come true? These were not my predictions—they were merely my words. The predictions came from the "crazy visionaries" who somehow "called the shot." As for me, I had, 10 years previous to that, predicted such "impossible" things as full-scale use of home food-waste grinders to eliminate every garbage can in America and to outlaw the disease-spreading fly, and envisioned the use of a pneumatic duct in the City of the Future, located under every city street and connected to every home, which would transport shredded household rubbish to central burning plants and eliminate forever the surface collection of the refuse of community life.

Radiation, Satellites, et al.

The dreams of simple things after the war have been converted to more complex dreams for a world at peace—atomic-powered ships, aircraft, and automobiles . . . magical cures with atomic radiation . . . man-made satellites circling the earth . . . telephones that answer themselves . . . fresh milk in ageless containers . . . extension of life expectancy to four-score and ten . . . chemical cookery . . . house lights actuated by a wave of the hand . . . new marvels in household appliances . . . new highways and aerial transit systems . . . air-conditioned work areas . . . shorter work periods and longer leisure —you predict them and try, if you can, to keep ahead of the actual consummation of the dreams!

These dreams can come true for America only if we continue to grow—and have a place in which to grow. The automatic population counter at the Department of Commerce in Washington recently clicked off 165,000,000

people in the United States. We are now predicting a population of 225,000,000 in 1975 and a doubling of industrial production in the next 20 years. As a demonstration of how dreams can fall short of reality, I must confess that at a post-war symposium, conducted by the Federation of Sewage and Industrial Wastes Associations in 1943, I reported the startling prediction by the Department of Commerce that the national income will approach the "staggering figure of $175,000,000,000 in the post-war period." And now it is predicted that it will reach $500,000,000,000 in the next year or two!

Where are we going to put the 60,000,000 additional people who will populate the nation by 1975? And what will we do to meet the living standards of people who will have more money to spend and more leisure in which to spend it? We are a nation of city dwellers and we had better plan on the bulk of our population demanding urban living at a high level.

Suburbanitis—1956

Growth will be in two directions: In the central city, and in the fringe areas, which are now feeling the impact of a new phenomenon in American life called "suburbanitis." The inward urbanization of the nineteenth century which crowded people into communities physically unfitted to receive them gave rise to the public health engineering movement which created artificial environmental conditions suitable for the massing of millions. The sanitary engineering profession is truly the child of the city—and the city is the child of sanitation practices.

Physical and psychological factors, other than the inability of public health engineering to meet the need, have resulted in an outward urban-to-suburban movement in the mid-twentieth century as people now seek the cleaner, roomier, and more peaceful environment of the rural area. Crowded living, crowded streets, and the degeneration of other urban conditions have caused this shift.

But the people who are becoming suburbanites are city dwellers at heart. They have tasted the pleasures of public services—of having someone else do the chores—and they carry these desires with them out into the fringe areas surrounding the central cities. They crave the rural atmosphere of the country road—but it must be underlain with water mains and sewers, topped with hard pavements, lighted with ornamental street fixtures, patrolled by police and firemen, and traversed by school buses.

Needed: 1975 Standards

The challenge is self-evident. It is necessary to rehabilitate our older cities to meet the standards of 1975 in terms of facilities and services; it is equally necessary to build the fringe communities in a modern pattern that will make them still modern two decades hence. It is necessary to plan entire areas on a metropolitan basis so that we can integrate the pieces of community life into a well organized tapestry, rather than a patchwork quilt of disorganized facilities and disjointed services. Unless we dream of such a new type of community we will never achieve it.

Well, we are dreaming about a new City of the Future and just as surely as rocket ships and nylons and antibiotics and atomic power we will have it. Perhaps the forerunner of predictions of the City of the Future was keynoted by a realistic vice-president of a great industry, W. V. O'Brien of the General Electric Company, who, more than a year ago, courageously predicted at a conference of utility executives that the city of a mere decade hence—1964—would experience an "Urban Renaissance," or a rebirth, that will make it a place of unbelievable comfort and con-

venience, thus causing "thousands" of people to return to the central city in a new wave of urbanization.

The City Reborn

The reborn city would be characterized by better streets and boulevards; efficiently planned traffic arteries; new standards of mass transportation; daylight-bright thoroughfares; better housing; ideal working conditions in modern offices and factories; better health and cleanliness; around-the-clock recreation under perfect illumination; new levels of comfort through mass air conditioning; new concepts of beauty and utility in public buildings and places of public gathering.

This bold prediction of "Urban Renaissance" has triggered off other predictions of equal enthusiasm. ACTION—the American Council To Improve Our Neighborhoods—has been organized to "make America a better place to live by cleaning up our slums and keeping up our homes" and the power of the press has rallied to this national betterment cause.

The U. S. Chamber of Commerce has announced a new motion picture, "People, Products and Progress: 1975," which predicts the future in store for America. The forecasts run the gamut from home marvels to "The City of the Future" with taller buildings and better highways, improved streets and air fields, all geared to modern living.

The Portland Cement Association has added its prediction of how the large metropolitan areas will look a quarter of a century from now, with new highways, new transportation centers, new air and bus facilities, and new structural beauty.

You can write your own ticket on the City of the Future and let your imagination run free on such things as traveling conveyor sidewalks . . . triple-decker streets . . . mid-city helicopter ports . . . vertical parking facilities and subsurface auto storage . . . heated streets and roads, which automatically turn on radiant heat to battle ice and snow . . . new open areas and malls . . . all fireproof building construction . . . outdoor air-conditioned cities . . . new concepts in industrial zoning . . . flood and drought control . . . community television projection. You name it and electrification, mechanization, and automation will make it possible. There is no limit to the achievements of modern science and modern will power. You can count on physical facilities in the City of the Future to meet every one of the needs of the citizens of the future.

But what of community sanitation? How will these things be possible unless we build a metropolitan community with the type of environment which will make it possible for people to live to fourscore and ten and to enjoy life while they do it? That is the challenge of the future city for the public health engineering profession.

Dreaming is no new experience for me. Twenty years ago I wrote a provocative piece in the "Grit Chamber" under the title of "The World Is Not Finished," in which I voiced a challenge which I repeat today as even more pertinent and more fulfillable than it was. In 1975, 20 years after this repeat performance, I am sure that an inventory of sanitary engineering achievements would result in all of the following projects being marked "Job Well Done."

"A hundred years ago the director of the Government Patent Office resigned because nothing else new could be patented. For him, the world was finished.

"A hundred years ago, no doubt, workers in the field of public health may have thought that nothing new could be developed in the fight against disease and discomfort. But we have gone on to provide new standards of health and

convenience for city dwellers. The miracles of movies, airplanes, radio, and transportation have been matched by equal miracles of health protection.

"Yet the municipal sanitation field is not yet finished. We are not yet ready for a Sabbatical rest in our fight to clean communities. The score and more of cities with perfect typhoid records for 1935 must be extended to thousands . . . water must be tasteless and odorless . . . stacks must be smokeless . . . streams must be sewageless and wastesless . . . sludge tanks must be foamless . . . atmospheres must be humidless . . . streets must be spotless . . . swimming pools must be germless . . . plumbing must be cross-connectionless . . . the world must be droughtless and floodless.

"Then, a hundred years hence, a new crop of sanitary engineers will make a new survey and say, 'The world is not yet finished.' "

Yesterday's Fancy—Today's Fact

Yesterday's fantasy is today's fact and today's dreams will most certainly become tomorrow's realities. New foods, new products, new levels of home comforts, unsnarling of our traffic mess, correction of our recreational deficiencies, illumination of our community's dark and dangerous areas, mass solutions of major transportation ills, and beautification of land areas will be accomplished because men who think "big" today are certain to build "big" in the tomorrows.

The challenge to the engineering profession is to match these marvels by rebuilding our standards of community environment in our decadent central cities and developing a new sanitation climate in the satellite towns that are springing up in the open areas fringing parent cities. We need a multibillion dollar sewage treatment construction program to provide new facilities and regear old works to meet present-day needs. We must plow billions into industrial wastes pollution control programs. Waterworks systems must be expanded and improved to provide water of unimpeachable palatability, serviceability, and safety to meet the needs of 225 million people. Drought control and flood control must be achieved, not only by engineering structures, but by learning to anticipate the vagaries of nature and to prevent rather than cure them.

New Sanitation Standards

The refuse dump must be outlawed as an incongruity in modern community life. If our standards will not eliminate these areas, the filling in of blank land by people, not municipal rubbish, will surely outmode them. The fly, the rodent, the mosquito, and other insect infestations must be eliminated by environmental sanitation practices. Slums must be wiped out, as breeders of unhealthy minds, bodies, and spirits. Food and milk sanitation must achieve superior standards of cleanliness and purity, perhaps through the use of such devices as atomic radiation. Smoke, smog, smaze, and smist must be cleared from the atmosphere by new methods of atomic heat and power and control of stack gases. Cities must be freed from litter.

In the light of the dreams of a General Electric vice-president, of the U. S. Chamber of Commerce, of the work of ACTION, and of the scores of other persons and agencies who will make good on the great physical developments which they have predicted, there is nothing fantastic about these public health engineering goals. The City of the Future cannot become a reality unless the sanitary engineering profession meets its challenge. If we blend our dreams with the vital ingredient of courage, we will assure a better nation and a better life in 1975.

An Approach to Improving Health Services for Migrant Agricultural Workers

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It is brought out in this paper that the health problems of migrant agricultural workers are quite similar to those of some local residents though they are aggravated by the precarious circumstances of the migrants' lives. Practices that made for success in labor camps have application elsewhere.

For many years there have been isolated attempts throughout the United States to improve the health, welfare, and educational status of agricultural migrant workers. These have been sponsored by voluntary and public agencies from various administrative levels. Some of these continue and some have been abandoned. Despite increased mechanization, the need for agricultural migrants continues. Developments in agriculture have increased the peak needs for farm workers and simultaneously reduced year-round work opportunities in any one place. At present the total migrant farm labor force approximates 1.4 million persons.[1]

The establishment of the President's Committee on Migratory Labor in August, 1954, has given impetus to coordinating more effective health, education, and welfare services in and between states and local communities. The ultimate goal in improving health services for migrant agricultural workers is to make available to them the preventive measures and preventive and therapeutic services of at least the quality and quantity available to the resident population. In many areas the lack of both such services to the nonmobile and usually rural populations where the migrants work requires modification of this goal, so that it becomes one of making available prevention and treatment facilities for all of those—migrant and resident—in the area.

In approaching establishment of a successful, long-term, self-perpetuating MCH program for migrant workers, five general premises are basic. First, the services for migrants should be ultimately inseparable from those of the local community. The term "making services available" was used in the statement of the goal rather than "providing services" because in many locations a coordination of existing services both public and private is all that is needed. In some areas new public or private services may need to be established or ongoing ones expanded during peak seasons. The quality of continuity and integration will be dependent to a high degree on realistic staffing and financing of the program.

Second, the MCH or any other health service cannot be isolated either in time or in geographic area. Whatever is accomplished in one spot must be coordinated with what is or is not being done in every other place where the migrant travels or resides throughout the year.

Third, although a program specifically for mothers and children has some peculiar characteristics of its own, the

interrelationships of services to the entire family cannot be disregarded nor can the program be carried on apart from a good, general public health program which integrates public and private services and agencies.

Fourth, a successful MCH program is inseparable from the local welfare, sanitary and housing programs; it cannot be carried on without consideration of the employer's practices, policies, and beliefs nor are its problems isolated from the legislation governing community services.

Fifth, "availability" of a health service to the migrants is broader than either geographic location or existence of a service—the service is truly available only if it is acceptable to and meets the needs of the group.

This acceptability is a part of the cultural characteristics not only of the migrating group but also of the town, city, or state where the migrant comes to work. In both groups—the mobile and the nonmobile—the cultures and medical needs are different in different localities. Therefore, in order to be utilized programs need to vary. A local program for Spanish-speaking migrants cannot be identical in Colorado and in Texas any more than local programs in Florida can be identical for Puerto Ricans and Negroes. The basic premises can be applied, but must necessarily be adapted.

In July, 1954, a project was agreed upon with the Children's Bureau for improving the quality and availability of health services to mothers and children of migrant agricultural workers who come into Colorado. Its aim was to set up a minimal state structure for coordinating the various local services and then to proceed community-by-community to organize plans that would fit the needs and facilities of the local situation. At every step consideration was to be given to improvement of communications between the migrant workers and local residents, the agencies and the officials concerned, the local communities within the state, and the states from which these migrants had come.

During the winter of 1954–1955 the project got under way, under the direction of the chief of the Maternal and Child Health and Crippled Children Section of the Colorado State Department of Public Health. In addition to a special grant, the Children's Bureau furnished consultation and assistance with interstate referrals through the regional staff. An experienced medical social worker, who was thoroughly familiar with the resources of the state, was assigned full time to the project. Exploratory visits were made to a number of communities in Colorado to gather information about resources already available, particularly health and welfare services, housing facilities, methods of recruitment, number of workers and families concentrated in specific areas, and dates of peak activities. It was found useful to visit a wide variety of persons as reports of community attitudes varied considerably with the personal feelings of the individual, as well as with the philosophy of the community regarding health services and migrant laborers in general. This meant proceeding slowly, but the time was not wasted since local people had to understand that we were interested in planning with them and not in trying to impose a program upon them. It was made very clear that each feature of any program set up in the community

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would be one mutually agreed upon.

In the spring of 1955 two local projects were begun, based upon the two largest labor camps in the state. That in Fort Lupton, in Weld County, houses a maximum of about 2,000 workers and their families, all Spanish-speaking stock from Texas and New Mexico, except for the brief sojourn of a few Indians. They come to do stoop labor in the sugar beet fields, in small vegetables for the canneries, and in the potato harvest. The work is spread over about four months, although there is much seasonal variation.

The camp at Palisade, in Mesa County, can house about 1,000 persons. While the peak season lasts only about two weeks during the peach harvest, the camp is used from early summer for those who come to work in the fruit and small vegetables for the canneries. Many are residents of Colorado, especially the 20 per cent who are Spanish-speaking. The remainder who drift in from almost any state in the Union are predominately of Anglo background, and range from teachers and students on vacation to misfits and ne'er-do-wells. There are a few Negroes, mostly self-respecting and industrious.

At each camp a temporary staff was organized, responsible administratively to the local health officer. Provision was made for travel, supplies, maintenance of clinic facilities, and payment of fees to physicians serving in the clinics. After discussion with the local groups it was decided not to make provision for dental services, for hospital services, nor fee-for-service in physicians' offices. The question of payment for diagnostic laboratory services and x-ray services was left open. Hospitalization, private medical fees, and essential transportation of patients were arranged for by the community when the migrants could not provide their own.

In the Fort Lupton camp the staff from April 18 to September 15 consisted of a public health nurse, a Spanish-speaking graduate clinic nurse, and a Spanish-speaking secretary. Medical clinics were held six nights a week from May 2 to September 1, staffed by members of the Weld County Medical Society in rotation. Some medications were supplied directly, some on prescription. A mobile x-ray unit was installed and chest plates were taken on all who could be interested in having them, although no attempt at mass screening was made. Patients were asked to pay whatever they could, up to $2, for a call at the medical clinic, but no one was refused, regardless of whether he could pay.

At Palisade, in Mesa County, a registered nurse was assigned to the camp and a public health nurse to work in the camp and in the surrounding area based upon it from April 18 to September 15. First aid and nursing service were offered. Patients were assisted in securing medical care through referral to local physicians. Nurses gave health supervision of the day care center set up by the workers of the National Council of Churches.

During a preseason orientation period the camp nurses were instructed in the social and cultural aspects of the health problems of these migrants by a social anthropologist unusually expert in this field. It was emphasized that the clinical and nursing services were made available so that people would seek them more readily, but that this was only a beginning of our responsibility. Contacts were to be followed up. No opening for giving a little advice or guidance or for attracting groups for informal health education was to be overlooked. Where care or advice was rejected, an attempt was to be made to note the reasons, and a careful record was to be kept of these experiences. The medical social consultant was available for consultation, as well as for direct service on problem cases and she, too, was diligent in observing the types of

problems and degree of success or failure in their solution.

At the Palisade camp the nurses took a large share of responsibility for treatment of minor conditions and for determination of need for referral to a physician. The local physician in the town of Palisade was on call for advice.

In their orientation period the nurses worked with the health educator of the Colorado State Department of Public Health in preparing material which might be suitable for health teaching among the migrants. In practical application it was found that they had little opportunity to conduct formal classes for adults, but they did individual teaching particularly on infant and child care. In both camps they gave instructive talks and showed films to the recreation and study groups, which were assembled by the workers of the National Council of Churches.

At the beginning of the season, such groups as the county welfare department, the local employers' groups, the local agents of the State Employment Services, representatives of the Mission to the Migrants of the National Council of Churches, and of the Girl Scouts of U.S.A., as well as the local health departments and the local medical societies, were brought into the planning. Representing these groups an Advisory Committee on Migrants was formed, in Mesa County, which will continue to function in the coming season. Since even in local areas such agencies are often ignorant of each other's resources and programs, bringing about understanding is a considerable undertaking, not to be fully accomplished in one season, but the progress is encouraging.

One of the first steps was to design record forms, with the assistance of expert consultants from the Children's Bureau and the Public Health Service. This proved to be an exacting task, since it was essential that the records be useful at the clinics and still serve as an effective channel for the transfer of information to other agencies within and without the state. These forms have proved useful in operation during the 1955 season, but some important changes must be made if they are to form the basis of a widely used record system. More thought must be given particularly to the means of transferring brief essential information about a patient or a family from one area to another, either with the family or later upon request. A study in the spring of 1955 of what had happened to clinic records given to patients passing through the screening program carried on in 1954 with the Public Health Service gives evidence that the retention of records depends largely on the size, shape, and durability of the container which is furnished with them, but that both patients and health agencies need much more education in their potential usefulness.

The utilization of the health services is shown in Table 1.

In Mesa County the Welfare Department assigned responsibility for work in the camp to one of its workers who was freely available for consultation at all times with the nurses. This assisted in solving social problems with the result that only eight cases were referred to the Welfare Department for assistance during the summer, a considerable drop over the record of previous years.

The assignment of a medical social worker to assist full time in the organization of the project proved to be very useful. She helped in community organization and project planning, serving as a liaison person with other local, state, and federal agencies, promoting interagency cooperation by keeping them better informed. She gave technical consultation to the staff of both camps and some direct service in patients referred with chronic illness or with other particular problems. A typical example of her activities is seen in the history of a family in which the

Table 1—Colorado Migrant Health Project, 1955

	Fort Lupton	Palisade
Families in camp	425	328
Individuals in camp	2,213	1,316
Adults in camp	1,190	832
Children in camp	1,023	484
Families seen in clinic	198	135
Individuals seen in clinic	496	224
Adults seen in clinic	226	88
Children seen in clinic	270	136
Individuals seen by doctor	319	72
Individuals seen by nurse alone in clinic	181	224
Total visits to clinic	1,056	385
Total public health nursing home visits	73	633

Clinic services were used at some time by 22 per cent of the individuals at Fort Lupton and 17 per cent of those at Palisade. Comparison between the figures from the two camps cannot be exactly drawn because of the different policies in operation. In Fort Lupton home visiting by nurses was not emphasized; in Palisade the nurses routinely made contact with all new families.

In both camps the clinical conditions most frequently seen were diarrhea and upper respiratory infections. There were 35 known pregnancies in Fort Lupton; 23 in Palisade; one infant death and one delivery in Fort Lupton, none in Palisade. A rather puzzling contrast is the incidence of burns, high in Palisade, low in Fort Lupton.

husband had been injured in a truck accident, suffering a nerve injury and partial loss of function of his hand and arm. Both he and his wife were confused about how to secure medical care, were bitter and unhappy about the accident, and resentful toward the employing company. By listening to their problems, securing appointments at Colorado General Hospital and referring them to the Social Service Department there, interpreting the medical and personal needs to the company and, in general, giving support to the family, we were able to help them through a very difficult time and to see that as adequate a plan as possible was made for them.

At the end of the season meetings were held in both Mesa and Weld Counties to discuss the summer's experience, to attempt to evaluate the strengths and weaknesses, and to plan for another season. In both areas the programs were considered definitely successful. It was felt that the health needs of the people in the camps were handled earlier and more smoothly than had been the case in the past, and that thereby complications had been reduced. Members of the medical profession in both areas were pleased because they had been relieved of some of the unnecessary and minor work. As they became familiar with it, they found the follow-up by the public health nurse and the social worker useful. It was evident that relationships and communications between local agencies had improved as they learned more about each other's functions and resources. In Mesa County, where the nursing staff had worked closely with the representatives of the peach growers and had made contacts in the community, an excellent relationship had been established which was reflected in better understanding of the local health department.

Both communities wish to have a similar program continued and have relatively few changes to suggest. They

are not as much concerned as are members of the state staff over certain definite shortcomings in the past years' program. Granting that it was essential to begin at the focal point of local interest, namely, in the camps, these programs cannot be said to have served the migrants throughout their respective counties or even throughout the major part of the counties. The services were not sought by most of the migrants living in small camps elsewhere in the counties or on the ranches, so a campaign of publicity is planned to inform the employers, ranchers, and other interested groups throughout the county about the services they can expect for their employees. There will be a wider area of activity for the migrant public health nurses and probably a social worker will be attached to each project for the summer season.

Problems of chronic disease and disability came to light in both camps. Some of these were cases of tuberculosis which, although they could not meet the residence requirements for hospitalization at state expense, were accepted free-of-charge at one of the voluntary institutions. Often getting the patient hospitalized hinged upon working out a satisfactory provision for the other members of the family, particularly the children. Some other problems of chronic disease and disability which were found among Colorado residents will be traced back to their point of origin during the winter to find out what has been or can be done to assist them.

The summer's experience has confirmed our faith in the principles on which the local projects for migrants were set up. Other areas in the state are now expressing an interest in making some health plan for migrants for the coming season. In working with them we shall be even more acutely aware that, to perpetuate itself, a local program must be so oriented that it can eventually become part of the health services available to all residents of the community throughout the year. Hence, it must take into account the economic facts of life; it must enlist wide local interest, understanding, and support; it must recognize the cultural attitudes both of the migrants and of the community and must make definite efforts to resolve the differences between them; and, because the flow of migrant labor is governed by the variations of growing seasons, it must always be flexible. Our experience indicates that migrant workers will accept health services that are offered in terms they can understand, and that in general their medical problems are like those anticipated in the resident population, aggravated by the precarious circumstances of their lives.

But since local care of migrant agricultural laborers is only a fraction of the total care of all migrants, we plan to work through the winter in improving communications with the communities in the matter of other services. The record forms must be overhauled and improved and we would like to do this in consultation with as many interested groups as possible, with particular emphasis on the means of referring patients from one service to another. We shall, of course, cooperate in any moves toward regional planning and will continue to advocate the formation of a state committee for Colorado. With such a committee and with the state structure properly integrated with that of the region, we believe that health services in local areas can be so developed and fitted together that migrants, like other citizens, can receive the care they need.

Comparison of Coliform Group Organisms with Enterococci from Well Waters

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Constant search for ways to improve bacteriologic methods of water analysis has turned to the inclusion of the enterococcus group as indicators of pollution. Here tests for these organisms are suggested as possible replacements of, or regular additions to, those for the coliform group.

The presence of large numbers of enterococci in streams and other polluted surface waters has been established.[1-3] They have been shown to be absent from, or present in small numbers in, surface waters free from obvious sources of fecal pollution.[4] A study of well waters in Kentucky [5] reported that coliforms and streptococci have almost equal value as indexes of pollution. Streptococcus fecalis was one of the test organisms used in California [6] in an investigation of the travel of pollution in underground formations. These studies showed no difference in the distance of travel of this organism and of coliform bacteria.

Laboratory procedures have utilized two types of media: one selective for Strep. fecalis of which the technic of Winter and Sandholzer [7] is an example, and one, such as the azide dextrose broth of Rothe,[8] in which a broader selection of coccus forms, including enterococcus variants, will grow. Support for the inclusion of variant forms is given by the studies of Cooper and Ramadan [9] who isolated the streptococci from 90 samples of feces from human beings, cattle, and sheep. They reported that all sources share several groups of streptococci that differ from typical Strep. fecalis in essential criteria. These atypical forms made up 25 per cent of the human strains, 58 per cent of bovine, and 75 per cent of sheep strains.

The study here reported was made to compare the relative values of enterococci and coliforms as test organisms for well water and to correlate the bacteriological quality of the sample with the sanitary survey of its source.

Methods

Before the study was started arrangements were made with the sanitarians in the county health units in Kansas to supply information on a questionnaire covering the sanitary survey of each well, when submitting a sample for routine analysis. To insure as much uniformity as possible instruction in the use of the questionnaire was given. Sanitarians from 12 counties participated in the work, sending to the central laboratory one sample from each of 595 wells. In addition, check samples were analyzed from 59 sources. The majority of the samples were received in 24 hours and all within 48 hours.

The most probable number (MPN) index of coliform bacteria was determined according to Standard Methods for the Examination of Water and Sewage,[10] using lactose broth with confirmation in brilliant green bile. Por-

Table 1—Comparison of Construction and Coliform Index of 595 Wells, One Sample per Source

Number of Sources	MPN Index of Coliforms	Type of Construction *					
		Dug		Drilled		Driven	
		No.	Per cent	No.	Per cent	No.	Per cent
350	Less than 2.1	22	18.2	149	57.6	169	87.1
50	2.1–4.7	9	7.4	30	11.6	11	5.7
32	8.3–14	9	7.4	19	7.3	4	2.1
23	28	11	9.1	11	4.2	0	0
54	45–240	18	14.9	26	10.0	6	3.1
27	460–1,100	17	14.0	6	2.3	3	1.5
59	More than 1,100	35	29.0	18	7.0	1	0.5
595		121	100.0	259	100.0	194	100.0

* No information about construction of 21 wells

tions of sample inoculated were five 10 ml, three 1 ml, and three 0.1 ml amounts. The MPN index of enterococci was determined by inoculating similar amounts of water into the azide dextrose broth of Rothe. Tubes positive within 48 hours at 35° C were confirmed by transfer to crystal violet azide broth.* This medium was developed by Ritter and Treece [11] in a study of swimming pool samples and later modified for greater specificity by the addition of crystal violet. It has been successfully used by the authors for confirmation of enterococci from contaminated river samples. Comparison with the ethyl violet azide broth of Litsky, Mallmann, and Fifield [12] showed that the two methods may be considered as of similar value.

The enterococci from samples picked at random were isolated and classified. All positive violet azide confirmatory tubes from these samples were streaked on plates of Proteose No. 3 Hemoglobin Agar (Difco). As a preliminary step all positive azide dextrose presumptive tubes were also streaked on agar, but as this did not yield isolates of different types or distribution it was discontinued. The purified cultures were examined microscopically for Gram-positive cocci in chains of four or more units and classified by tests recommended by Sherman [13] and by the Winter-Sandholzer method. Tests used were strong reduction, growth at 45° C, and in the presence of 0.1 per cent methylene blue, 6.5 per cent NaCl and pH 9.6.

The items concerning the physical aspects of the wells, as given on the completed questionnaires, were tabulated and evaluated according to the coliform MPN index, which is the accepted measure of water quality. The answers indicated that for this series of wells construction of the supply is more important than location. A critical study

* The formula is:

	Gm/l
Proteose peptone No. 3	20.0
Dextrose	1.0
NaCl	5.0
Sodium azide	0.2
Crystal violet	0.0005

The lot used in this study was especially prepared and supplied in dehydrated form by the Difco Laboratories.

Miss Ritter is chief bacteriologist, Mr. Shull is chief of General Sanitation Section, and Mr. Quinley is assistant bacteriologist, Division of Sanitation, Kansas State Board of Health, University of Kansas, Lawrence, Kans.

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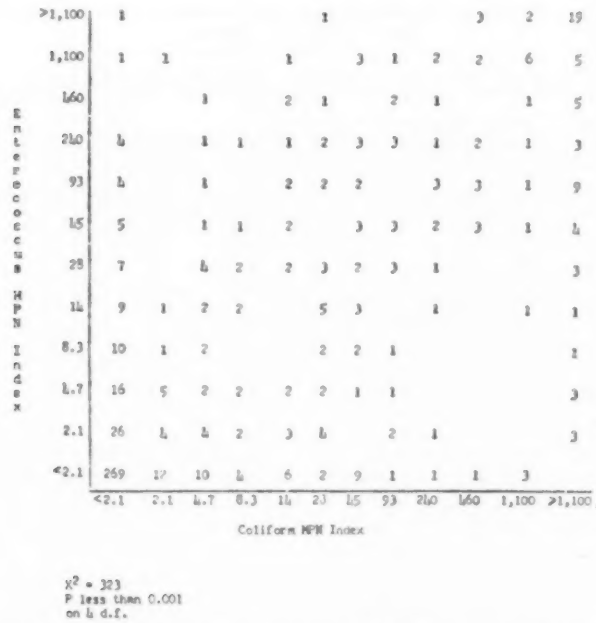

Figure 1—Scatter Diagram Relating the Most Probable Number Indexes of Coliform Bacteria and of Enterococci of 607 Samples from 595 Wells

of the significance of each item, considering both coliform and enterococcus MPN indexes, is the subject of a separate report.

Results

The 595 samples examined were collected from wells penetrating into water-bearing formations ranging from heavy clays to coarse glacial deposits. Many of the driven wells were located in the flood plains of the Arkansas and Kansas rivers.

Table 1 shows the numbers of wells with different amounts of contamination as measured by the coliform index. Comparison is made of the laboratory result with the type of construction of the supply: dug, drilled, or driven. A greater degree of sanitary safety is suggested for drilled and driven wells, as samples from these sources showed a coliform MPN of less than 2.1 from 318 or 70.2 per cent of 453 wells, and index values greater than 28 from 60 wells or 13 per cent. The trend is reversed for dug wells, as 22 or 18.2 per cent of 121 samples had an index less than 2.1 and 70, or 57.9 per cent, showed index values greater than 28.

The coliform and enterococcus MPN indexes are compared in a scatter diagram, Figure 1. The two MPN values for each sample are plotted against each other and presented as numbers of points. In some cases it was necessary to change a value to conform with the divisions on the diagram, for example, a value of 4.2 was plotted as 4.7. Such irregularities were shown more often by enterococci than by coliform bacteria.

Breaking down the diagram into a 3×3 contingency table and applying the chi-square contingency test for independence of classification yields a value of 323 for a chi-square with four degrees of freedom, which indicates nonindependence with almost certainty (P less than 0.001). There is less than a 1–1,000 probability that the numbers of coliforms and of enterococci would show this degree of relationship by chance, if indeed they were independent of each other. Thus it is essentially certain that there is an association between the numbers of the two organisms and it is clear from the diagram that the relation is that they tend to be large or small together.

Results from 269 samples were negative in both tests. At the other extreme coliforms in excess of 1,100 were always accompanied by enterococci. Two groups of samples showed one type of indicator organism only. There were 49 samples with coliforms alone and 83 samples with enterococci alone. A comparison of the construction of the sources of these samples showed no significant difference, as almost equal percentages of the total number of dug, drilled, and driven wells tested yielded samples which fell into these two groups.

Isolations of 424 cultures of enterococci were made from 80 samples. The tests used for classification divided the strains into a typical group of 284 with the characteristics of Strep. fecalis and an atypical group of 140 which differed from the typical in one or more of the characteristics studied. The most frequently occurring characteristic of the atypical group was growth at pH 9.6, observed in 60.7 per cent of the atypical strains; next was growth at 45° C in

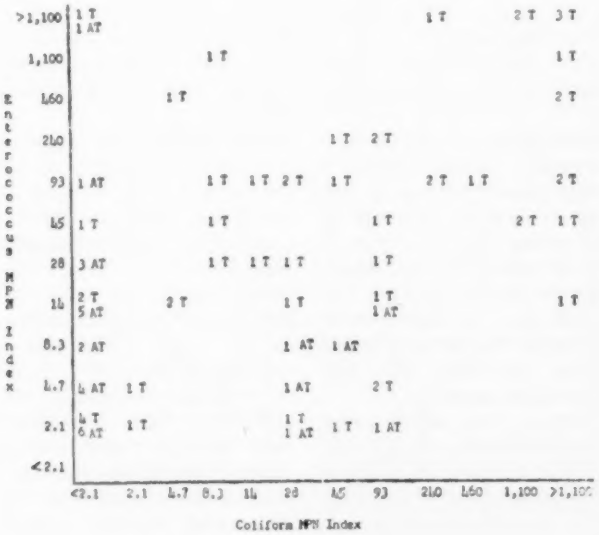

Figure 2—Scatter Diagram Relating the Most Probable Number Indexes of Coliform Bacteria and Enterococci and the Type of Enterococci from 80 Samples of Well Water

Table 2—Relationships of Typical and Atypical Enterococci to Coliforms from 72 Wells of Different Construction

Well Construction	No.	Typical Enterococci			Atypical Enterococci		
		Coliform MPN Less Than 2.1	Coliforms Recovered	Total	Coliform MPN Less Than 2.1	Coliforms Recovered	Total
Dug	25	1	22	23	0	2	2
Drilled	30	4	14	18	10	2	12
Driven	17	2	2	4	12	1	13
	72	7	38	45	22	5	27

37.8 per cent; with 6.5 per cent NaCl in 29.3 per cent; strong reduction in 25.7 per cent and growth in 0.1 per cent methylene blue in 19.3 per cent of the atypical strains. In the Winter-Sandholzer enterococci test atypical strains were negative and typical strains were positive. The atypical group grew more slowly than the typical strains, producing turbidity in liquid media in 48 hours instead of 24 hours. Sixty-six per cent of the atypical strains showed a green-yellow discoloration on hemoglobin agar, as observed also by Cooper and Ramadan [9] for their atypical fecal strains.

The relationships shown by the numbers of both coliforms and enterococci and the differentiation of typical and atypical enterococci in these samples is shown in the scatter diagram, Figure 2. It may be noted that of the 28 samples with only atypical strains 78.6 per cent yielded no coliforms. A high percentage, 84.6, of the 52 samples with typical enterococci was associated with coliforms in appreciable numbers.

The 80 samples from which enterococci were isolated were collected from 74 wells. Table 2 shows the relationship of the construction of 72 of these wells with the type of enterococci and the presence or absence of coliforms. Included in the group of 45 with typical enterococci are 14 wells yielding samples in which typical strains predominated, but atypical strains were also present, usually in the smallest amount of sample that was positive. These samples always contained coliforms in comparable numbers. Typical enterococci with coliforms were recovered from 22 of 25 dug wells, 14 of 30 drilled wells, and two of 17 driven wells. Atypical strains without coliforms were recovered from none of the 25 dug wells and from only two dug wells when coliforms were present. Samples from drilled and driven wells showed high proportions of atypical enterococci recoveries without coliforms, being from 10 of the 30 drilled wells and 12 of the 17 driven wells.

The problem of change in numbers and types of enterococci in samples subject to a delay in shipping was investigated. When typical and atypical strains were inoculated together in varying amounts into sterile water neither strain outgrew the other. Total numbers showed a slight decrease after one day of storage and a more marked decrease after two days.

Check samples totaling 66 were received from 59 wells at intervals of two weeks to a year after the first sample. Comparison of tests from each well showed certain variations. In 21 pairs of samples coliform indexes had the same value, 16 of these being less than 2.1. Twenty-three cases showed an increase in coliforms; 22 showed a decrease, of which 14 were less than 2.1. Enterococci alone were isolated from

18 wells in one or both of the samples; 13 of these sources contained small numbers of coliforms in one sample. Where the enterococci were classified, types, in general, were typical when coliforms had increased and atypical when coliforms were absent or present in small numbers.

Discussion

Results from this series of well samples indicate that the test for enterococci would be a useful addition to the test for coliforms. It may be of greatest value in those indeterminate cases where the samples show contamination to be fluctuating or of a low order. This is suggested by the 83 samples with enterococci only as compared with 49 samples with coliforms only, and by the check samples which showed changing results in coliform and enterococcus numbers and relationships.

The enterococci in water are of fecal origin and too little is known of the length of survival or comparative numbers of different groups. The distribution of atypical strains seems comparable to that of the Aerobacter aerogenes and Escherichia freundii sections of the coliform group, which may be the only coliforms recovered from the water when the source of contamination is not apparent or is far removed.[14] They are frequently the only coliforms isolated from the highest dilutions of a sample of river water.

It is possible that samples showing only atypical enterococcus recoveries may have contained typical strains at the source. However, observations from this study suggest that typical enterococci will be recovered, if present, as their growth rate is faster than that of the atypical strains. For the determination of enterococci in water samples an inclusive medium, such as azide dextrose broth with confirmation, is the method of choice. It may be compared with the standard method for determination of the coliform group.

Future work should consider isolation and differentiation of coliform bacteria, especially when they are present in small numbers. Surveys of wells with different types of construction should be made, isolating and classifying both enterococci and coliforms at frequent intervals. These studies should be of year-long duration to include the effects of seasonal variation. Sources should be local wells, so that the delay in shipping the sample may be avoided.

Summary

Samples from 595 wells in Kansas were tested for organisms of the coliform and enterococcus groups. The data showed there was positive association of these two groups of bacteria; the chi-square test indicated nonindependence with probability less than 0.001.

The enterococcus test was found most useful for those wells with coliform values low or fluctuating. Atypical strains of enterococci were isolated from well samples of good sanitary quality as measured by the coliform test. Results indicate that a test for the entire enterococcus group is to be preferred to one for Streptococcus fecalis only.

The importance of good well construction was shown by these studies. Drilled and driven wells yielded waters of better sanitary quality than dug wells.

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Proposed Realignment for Federal Aid to Research

The report of a committee of the National Science Foundation, Washington, D. C., was announced on February 27, proposing a new pattern of organizing and supervising federal medical research as a result of an eight-month study made by an eight-man committee set up by the former Secretary of Health, Education, and Welfare, Oveta Culp Hobby.

Among the recommendations of the committee is that the categorical grants system should not be continued under which there is earmarking of funds for research in special fields, such as mental health, heart disease, and cancer. A new agency in the Department of Health, Education, and Welfare is proposed to replace the service now rendered by the National Institutes of Health on extramural research. This new group might be called the Office of Medical Research and Training.

It is further suggested that grants ought to be based more on the capacity of the investigator rather than on a particular field of research. An increase of more than 40 times was reported in the amount of extramural categorical grants since 1946.

The chairman of the eight-man committee was Dr. C. N. H. Long of the Yale University School of Medicine. Other members include: Drs. E. A. Doisy, St. Louis University School of Medicine; Ernest W. Goodpasture, Walter Reed Army Medical Center; A. B. Hastings, Harvard Medical School; Charles Huggins, the Ben May Cancer Research Laboratory, University of Chicago; Colin M. MacLeod, New York University School of Medicine; C. Philip Miller, University of Chicago; and W. M. Stanley, University of California.

Proper School Lighting

EVERETT M. STRONG

Eyesight conservation for school children is public health as well as school hygiene, because of public health's continuing interest in the well-being of the whole man. This report of improving engineering and architectural contributions to adequate lighting is reassuring.

The total environment provided by the structures that house people and that facilitate or obstruct their activities is receiving a good deal of current attention. For schools alone the estimated expenditure throughout the nation is to be over four billion dollars per year for the next decade. As we contemplate our responsibilities in a project of this magnitude we are coming to realize more fully that coordination of the elements that comprise the environment is a major requisite for a fully functional result, that the independent engineering and design of component parts is not enough. Lighting, especially, has suffered by minor and uncoordinated attention in the economic planning for either homes or schools, being regarded as something of an accessory. This applies not only to lamp lighting but also to the fenestration and other provisions for well engineered daylighting. I suppose that this may be attributed to the natural sequence of development as we proceed from an economy and competence which yield only the bare necessities of life to an era of greater material abundance. We do live in an era of individual and collective luxury.

Consider the familiar example of what has happened to highway transportation. Having moved from the rigors of the ox-cart to the motorized buckboard and the model T we now course the paved raceways of the countryside in such regal and individual splendor as can but remotely be related to the bare requirements for transporting people. Yet this is the accepted standard of the day.

In schools, too, we have come far from the little red school house, but were we to provide facilities for education comparable to those for transportation we would have not only schools for mass education (comparable to the public carrier of transportation) but a tutorial system with as fantastic a number of small units as we now have private automobiles. I do not argue for this yet. By comparison, our goals for school facilities seem quite modest. And I submit that so, too, do our standards for providing the light for a proper visual environment seem modest. Why do people, who cheerfully spend for their automobiles several times the cost of a dependable personal vehicle, demand scientific justification for more than a minimum standard of lighting? They justify the automobile because in our segment of civilization it is generally accepted—it is proper—it is the thing to do.

Now I shall not try in a few minutes

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This paper was presented before a Joint Session of the American School Health Association and the Engineering and Sanitation and School Health Sections of the American Public Health Association at the Eighty-Third Annual Meeting in Kansas City, Mo., November 15, 1955.

to describe in detail what is proper in lighting—even for school lighting. Much work has been done on school lighting which is widely published. But I will try to outline some of the engineering considerations in the lighting of any school and invite your attention to some phases of the problem which currently are receiving major consideration by those responsible. I should note here that an extensive revision is in process of the American Standard Association's "American Standard Practice for School Lighting." This is sponsored primarily by the Illuminating Engineering Society, the American Institute of Architecture, and the National Council of Schoolhouse Construction and by many others, including the American Public Health Association. A joint task committee from the three primary groups is working on the revision. We have already had several two- and three-day conferences and have attained a meeting of minds on several matters of some previous disagreement.

The elements of the general problem of school lighting are: (1) specifications of the activities to be served in the several areas; (2) the architectural structure of the building, including orientation and accessibility to sunlight, space dimensions, reflections, color, and specularity of surfaces, including floors and furniture; and (3) economic limitations.

The activities to be served are set by the educational program and involve visual tasks of various difficulty in varying amounts. The illumination values to be provided for these are widely published and the bases for them have been documented in terms of our knowledge especially of visibility threshold values and of visual performance criteria. Illumination in foot-candles, however, is but one element to be provided for. The image projected onto the retina covers an area much larger than that occupied by say the page of a book, and the whole visible environment, especially that nearer the book, affects the visual function. We know that the interrelation of the brightness of the surfaces which comprise the visible area must be controlled according to their relative areas, positions, and brightness—as compared with the critical task area and its brightness. Faulty brightness relationships give rise to sensations of glare which may be either uncomfortable or preventive in seeing the task, or both. These are commonly referred to as discomfort and disability glare, respectively. Glare is also classified as direct or indirect glare, depending on whether the offending brightness comes directly from a source of light, such as the sun, sky, upper wall, or lamp or whether it comes indirectly by reflection from specular surfaces, especially those of or near the task.

Because our concern in lighting extends beyond illumination of the task to encompass the whole visual environment we must give attention to the dimensions and finishes of the entire room and especially to the architect's provision for utilizing daylight. I should invite your concern particularly for the latter because, both nationally and internationally, it is attracting much effort and attention. Nearly every issue of our technical lighting publications here and abroad report on tests and studies of daylighting, and the International Lighting Congress, the CIE, at its meeting in Zurich last June advised that, especially for schools, daylighting alone and in combination with lamp lighting be studied during the four-year interim until the next meeting. I think we know pretty well how to specify and provide, by lamp lighting alone, a proper and quite satisfactory visual environment throughout a school. However, I do not believe that the same can be said for our current ability to utilize daylight for school lighting.

It is all very well to extol the possible

virtues of Nature's light and to observe that it is "for free." But I would remind you that that which is "for free" is not always the best buy, everything considered. Water power, for example, requires an expenditure in the construction and maintenance of dam, machinery, and transmission lines which, strictly as a power project, rarely can compete with steam-generated power using coal that is not "for free." Daylight even more than water power clearly is not a reliable source available all days at all hours. Furthermore, it is highly variable as to direction from hour to hour and month to month and in amount and diffusion on cloudy days. By the expenditure of much energy and ingenuity the joint efforts of architects and engineers have produced some major improvements in the fenestration and mechanics of daylight utilization, especially for schools. Unquestionably, these are more justified in the sunshine areas of the South than in our more northerly areas, but even there the problems are difficult of functional and economic solution. Especially difficult are the adequate control of brightness and temperature.

It seems to be a moot question whether or not we may have developed an obsession especially in our schools for daylight-motivated architecture which on sober contemplation and analysis may not be justified—at least not in all climates and latitudes throughout the nation. Such an analysis has been made by an architect-engineer team in Minneapolis and reported at the 1955 National Technical Conference of the IES.* The authors reach the conclusion that a distinction should be observed between the utilization of daylight for lighting and of provision for some daytime visibility from school rooms to the exterior areas. These are quite distinctly different objectives and I think we would not question the psychological desirability of some provision for looking out from the school room as distinguished from the possible virtue of daylight as a primary illumination of the school room. We should not allow ourselves to become overemotional about the benefits in the classroom of "natural" light as opposed to "artificial" light. Such distinction, bearing in mind that the sunlight is admitted only after selective absorption in some medium, usually glass, and therefore is no longer "natural," and bearing in mind that lamp light whether incandescent or fluorescent is neither synthetic nor artificial light but only that it is not sunlight.

It is possible now to provide the desired vision by using a low-transmission neutral color glass which does not admit, to the visual field of the room occupants brightnesses of glare magnitude. The required illumination by lamp light, which inevitably must be provided for use on dark days and all nights, then serves without major correlation with daylight.

Summarizing now the current status of school lighting we find that as the importance of well-planned environment becomes recognized, more attention is being given both to lighting by lamps and by daylight, and that more of the budget is allocated for the purpose. This interest in lighting stimulates not only the creation of enabling designs, materials, and equipment, but also stimulates the very considerable study and research required to determine just what visual environment is best for various activities. Though much research has already been done, the overall functioning of human vision is a complex process and as we proceed from the optical elements which project an

* Hammel, R. F., and Johnson, L. E.: Manufactured Light Vs. Daylight for Schoolrooms. A paper presented before the National Technical Conference of the Illuminating Engineering Society, September 12–16, 1955.

image of a person's visual environment onto the retina or "screen" of the eye we encounter the lesser understood functioning of the sensory elements, and when we come to the processes of cerebration it becomes very difficult to separate the influence of subjective judgments, interpretations, inhibitions, etc., from the more objective effects of the visual stimuli.

I have spoken of these not with the intent to burden you with their detailed technicalities but rather to invite your appreciation that we who study and engineer lighting are mindful of its purpose to serve human visual needs. It is I think in the province of others than engineers to do the researches on human visual processes but even as the architect must mold into a functional unit the services and skills of many arts and professions so likewise must the engineer mold into his engineering the knowledge and services available to him outside of his personal and professional competences. Neither the architect nor the engineer can provide a service of professional caliber unless the horizon of his vision extends beyond the mechanics of structures and beyond artisan competences. When their work is to serve the needs of people—and therefore involves emotional and subjective values outside of the realm of the physical sciences—the measure of these values involves statistical researches that are not only long and costly but which are applicable to individual people only within some degree of probability, even when the experimental conditions of the research apply to the actual circumstance. Researches in visual environment therefore proceed slowly but we are making progress and are utilizing in our engineering, as fast as it comes into focus, the knowledge gained to meet a rising standard of what is proper in serving the visual needs of people.

Public Health Reports Observes FDA's First Half Century

On the occasion of the 50th anniversary of the Food and Drug Administration, Public Health Reports of the Public Health Service, devotes its June issue largely to FDA. Papers by FDA officials describe the public health aspects of their work; FDA Commissioner G. P. Larrick introduces the series of articles among which are a paper on antibiotics certification by Henry Welch, Ph.D., one on nutrition by E. M. Nelson, Ph.D., and one on food sanitation by G. C. Slocum, Ph.D.

Copies of the food and drug anniversary issue may be reserved in advance with the Superintendent of Documents, Washington 25, D. C. 60¢.

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An Inescapable Public Health Responsibility

As the membership continues to ponder the question "Where Are We Going in Public Health?," one problem looms larger than all the rest in the class of community needs yet to be met. It has been thoughtfully predicted that one of each dozen children born this year will spend some part of its life in a mental hospital. One-half of all hospital patients in the country—some 750,000—are in hospital because of mental illness. Almost every individual needs, at least on occasion, specialized professional counsel concerning self-understanding, relations to other people, and adjustment to his life environment.

The magnitude of the problem of mental illness and deficiency defies statistics. Comprehension comes more clearly from a half-hour's march through the wards of any castellated "main-line" hospital of any state. Here is a problem defying individual therapy by pitifully small staffs. With recent significant advances in knowledge of the treatment of mental illness, discharge rates are slowly increasing, but so, too, are admissions. Only with the greatest effort of time and money can the balance be brought in favor of reduced institutional populations.

The public is daily becoming more actively aware of these facts. No longer the single voice of a Dorothea Dix or a Clifford Beers, the clamor grows as belated building bond issues are passed by decisive majorities; mental hospital operating budgets become major parts of the cost of government. The National Association for Mental Health is showing impressive growth and strengthening. The federal Congress has recognized the need for a comprehensive reassessment of the national problem. The consequent Joint Commission on Mental Illness and Health begins its intensive three-year inquiry in a favorable climate of support and concern.

Though not presently susceptible to precise definition and measurement, the mental illnesses demand aggressive concentration of epidemiologic study and development of methods for mental health maintenance and illness prevention. The recent Milbank Conference of the Milbank Memorial Fund and the current Commonwealth Fund volume on community programs point to the attempts already under way. They also underline lacks in the basic knowledge required to place such programs on other than a highly speculative foundation. The solutions will not easily be formulated, but neither were they for yellow fever, pellagra, or septicemia.

Here, for one place, we must be going in public health!

(The Journal is indebted to John D. Porterfield, M.D., director, State Department of Mental Hygiene and Correction, Columbus, Ohio, for assistance in the preparation of this editorial.)

Should the Premarital Blood Test Be Compulsory?

At the Kansas City meeting of the American Public Health Association a resolution was adopted by the Epidemiology Section calling for a committee inquiry into the present-day justification for the compulsory premarital blood test for syphilis.

Following adoption of the blood test law in Connecticut in 1935, legislation to require the test swept through most of the state legislatures, sometimes in spite of the doubts of health administrators. At present, all except the following nine areas have the compulsory premarital blood test: Maryland, District of Columbia, South Carolina, Mississippi, Minnesota, Arizona, Nevada, New Mexico, and Washington.

Nelson,[1] in 1947, published a statement opposing the compulsory blood test on grounds of meager results, high costs, and distress caused by false-positive serologies. Condit and Brewer [2] more recently reported that (1) from 1946 to 1951, primary and secondary cases of syphilis reported in California declined 88 per cent; (2) consequently, by 1951 the premarital test revealed but one unknown infectious case (primary or secondary) per 4,836 examinees; and (3) the cost of finding previously unknown cases was high and rapidly increasing. In spite of these difficulties Condit and Brewer recommended, however, that the premarital test should be continued. The decline of syphilis case reports in California is consistent with reports that in the United States the mortality from syphilis (all ages) has declined during the last 10 years by about 70 per cent [3] and the syphilis mortality in infancy by about 95 per cent.[4]

Hedrich [5] quotes data obtained from Upstate New York indicating that in 1954 less than one infectious case of syphilis was found per 10,000 premarital examinees. He estimates the cost of so finding an infectious case in that state to be in excess of $30,000. Unpublished data from New York State further suggest that the false-positives discovered by confirmatory tests now outnumber the new infectious cases found by a considerable margin. The effects of these false-positives may be serious and may conceivably stimulate public protest.

Under these circumstances, it seems more than appropriate to have a committee weigh carefully and objectively the accumulated experience on the benefits from the compulsory blood test as compared with its financial costs and whatever its social disabilities may be. The public health profession will await the results of such an evaluation with interest.

It should be emphasized that it is not the intent here to imply that intelligent preparation for marriage is unimportant, or that the syphilis problem in the United States has vanished. On the contrary, these problems merit the continued or even the increased attention of and evaluation by health workers.

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Suggested Home Accident Prevention Activities for Health Departments

Health departments throughout the country are becoming concerned with the public health aspects and effects of the large number of deaths and disabilities from accidental injury. This problem is rapidly replacing communicable diseases as a major threat to public health. The health department with its epidemiologic know-how, its easy access to the home, and the confidence of those in the home, is in a very advantageous position to help in the community approach to this problem.

The American Public Health Association has been active in this area for over a decade. In 1943 the Committee on Administrative Practice appointed a Subcommittee on Accident Prevention under the chairmanship of Donald Armstrong, M.D. A study at that time revealed that six state health departments and two local departments had some program activity in the field of accident prevention. Subsequently in 1945 a Suggested Program for Accident Prevention Activities was prepared by the committee and published in the March, 1945, issue of the American Journal of Public Health. In 1950 the subcommittee under the chairmanship of I. Jay Brightman, M.D., found that the number of health departments reporting activities in the field of home safety had risen to nine state and 25 local health departments.

The current subcommittee with A. L. Chapman, M.D., as chairman, carried out a new and extensive survey in the summer and fall of 1955 in a fresh effort to determine the extent to which health departments were participating in accident prevention activities and to learn the type and range of such activities. It was hoped to cast light on what various health departments felt were the most effective and appropriate measures in this field and to provide information for a revision of the previously published statement on accident prevention activities that would be based on a wide review of the actual practice in the field. An 18-item questionnaire was circulated to all (1,556) full-time state, provincial, and local health departments in the United States and Canada, and replies were received from more than 526. The returns * indicated that 33 state, 3 provincial, and 296 local health departments were conducting activities in the field of accident prevention. Although the majority of these departments utilized persons whose responsibilities included other public health tasks, there were 62 individuals whose full time was assigned to public health safety work.

This rapid growth in emphasis placed on accident prevention by a wide range of health departments is felt to be significant. The following statement on "Suggested Home Accident Prevention Activities for Health Departments" has been approved by the APHA Committee on Administrative Practice in January, 1956. It represents a careful revision of the former statement to which have been added the gleanings from the nation-wide survey of last year.

It is hoped that many of these suggested activities may be undertaken in the very near future by state and local

* Summaries of the report have been mailed to all full-time health departments and additional copies are available through the APHA office.

health departments as the prevention of accidents becomes accepted as a major public health responsibility.

Suggested Home Accident Prevention Activities in:

Administration

1. Arrange for the collection, analysis, and study of home accident statistics to determine necessary preventive steps in the area. Data on fatalities from the principal types of home accidents for states and the nation indicate that certain accidents are universal. Certain age, sex, and socioeconomic groups are especially affected. This knowledge may be applied to a locality for developing the broad outline of a preventive program. As statistics for the specific area become available, attention can be given to the problems that are peculiar to it.

2. Arrange for inservice education for health department personnel in the field of home accident prevention.

3. Stimulate the survey and evaluation of home accident prevention work of the community to determine what organizations are participating, what is actually being done, and what additional activities are needed.

4. Develop and promote a program for the effective integration and coordination of home accident prevention with the activities of existing units of the department. Instigate staff planning for organizing an effective home accident prevention program.

5. Take the initiative in developing cooperative relationships with other governmental departments such as welfare, fire, building inspection, and police; and in promoting and sponsoring organized community-wide home accident prevention activities, through voluntary agencies, safety councils, visiting nurse associations, and professional and educational organizations.

6. Consider the designation of a staff member, on full- or part-time basis, as conditions warrant, as an accident prevention coordinator for home safety activities of the department, working closely with the various disciplines within the department.

7. Keep community informed as to needs and progress of home accident prevention activities.

8. Develop a method and assign appropriate personnel for the periodic reevaluation of the program so as to make certain that the program is based upon the very latest scientific data obtained from all resources, as well as the actual but changing needs of the community.

Vital Statistics

1. Obtain additional data, supplementing the death certificate, for home accident fatalities. A suggested form for use in collecting this information through reporting officers, nurses, and others, has been developed by the Public Health Service.

2. Prepare monthly and annual tabulations and analyses of home accident fatalities, and follow through with their evaluation. A simple method for this purpose is outlined in the pamphlet, "Show the Facts About Home Accidents," prepared jointly by the Public Health Service and the National Safety Council.

3. Develop methods of obtaining and analyzing comparable data concerning nonfatal home accidents. Information regarding the occurrence of such accidents can be obtained from hospitals, physicians, insurance groups, or a sample of the population. Additional pertinent information pertaining to housing conditions and population characteristics can be obtained from census data and local sources. The American Public Health Association, the Public Health Service, and the National Safety Coun-

cil will be glad to assist the local health department in developing a plan for obtaining this information.

4. Make statistical data on home accidents available to those groups which can use it effectively.

Public Health Nursing

1. Evaluate the home accident prevention activities presently being carried out by nursing services.

2. In addition to inservice education planned for an entire health department,* arrange for home accident prevention education to become an integral part of all public health nursing inservice education and incorporate such education in the orientation program for new employees. With the health officer, invite other public health nurses in the area to attend these courses.

3. Include home accident prevention instruction in all regular nursing services, in home, school, industry, and clinics, and in all other nursing activities to the degree that home accident prevention technics apply. This would include both individual and group activities.

4. Observe the homes visited for deficiencies or conditions that are suspected or known to have an accident potential, and make suggestions for the correction of such hazards in the course of a home visit. Refer the condition to the appropriate agency when necessary, if correction cannot be secured otherwise.

5. Cooperate with community home accident prevention programs in whatever capacity nursing skills and interest can most profitably be used.

6. Arrange for public health nurses to assist with collection of incidence and epidemiological data of all home accidents meeting the criteria for a particular study or analysis.

Maternal and Child Health

1. Make a special study of child accident reports collected as a part of the health department home accident reporting program relative to the care of infants and younger children. Analyze and study the major areas of causation and make recommendations for preventive measures.

2. Integrate home accident material and counseling into the program of anticipatory guidance for appropriate age groups in child health services.

3. Integrate home safety education into postpartum and infant visits of public health nurses.

4. Act jointly with school authorities on a home accident prevention program centered in various grades in school.

5. Study and implement methods of reaching groups of expectant parents, parents of young children, Parent-Teachers Associations, or other groups of parents with accident prevention material. This should be integrated into regularly scheduled meetings or discussions of these groups.

6. Through the health officer, establish liaison with the maternal and child health section of the state medical society and local members of the American Academy of Pediatrics, since both of these groups are concerned with and can assist in promoting home accident prevention.

7. Conduct with the assistance of other department units epidemiological studies of poisoning and other types of home accidents that have seasonal or regional patterns.

8. Assist in training of baby sitters.

Crippled Children's and Adult Health Programs

1. Determine the extent to which accidents are responsible for handicapping conditions.

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* Home Accident Prevention—A Guide for Health Workers. PHS Pub. No. 261, is available for use in training.

2. Suggest methods for the prevention of accidents based on these experiences.

Environmental Sanitation

1. Evaluate the home accident prevention activities presently being carried out by environmental sanitation services.

2. In addition to inservice education planned for an entire health department,* arrange for home accident prevention education to become an integral part of all environmental sanitation inservice education and incorporate such education in the orientation program for new employees. Invite other sanitarians in the area to attend these courses.

3. Investigate and inventory the local problem and the existing efforts directed toward it, through contact with local governmental agencies, public utility companies, and professional and civic groups related to sanitation work.

4. Make a study, possibly in conjunction with housing and health surveys, of unsafe conditions in home premises to determine need of legislative action.

5. Encourage the adoption of ordinances and codes containing provisions pertaining to home accident prevention services.

6. Work with householders in planning premises so as to eliminate or minimize environmental hazards and arrange for the reporting to proper authorities of unsafe conditions which are not the sole responsibility of the householder.

7. Promote safe home construction that will meet recommended housing and building standards.

8. Make available consultative services to builders, architects, building trades, public utility companies, other governmental agencies, industrial trades, mortgage loan agencies, and real estate associations.

9. Conduct training courses for various trade groups, such as janitors, building superintendents, plumbers, electricians, carpenters, and others in the maintenance and repair service field whose work may be involved as a factor in the cause or prevention of home accidents. Secure the assistance of the public utility groups for such training assistance since these groups already carry out such programs for their own employees.

10. Develop an information center on environmental hazards which can be made available and utilized by the community.

Industrial Hygiene

1. Consult with planning groups, with those preparing educational materials and talks, and with others regarding the safe use of poisons, including chemicals, gases, toxic vapors, and insecticides.

2. Assist with inservice training programs of state and local health department personnel in the field of toxicology, including methods of investigation and use of testing or sampling instruments.

3. Upon referral, investigate, at the local level, special toxic conditions in the home where the special skills of the engineers or industrial medical (toxicology, etc.) personnel are needed.

Food and Drug Control

1. Study the use, storage, and labeling of poisonous materials in homes.

2. Consider the need of additional regulations regarding their use and storage.

3. Develop educational material on the subject.

4. Teach the precautions to be taken in connection with poisons and ways to minimize the use of toxic materials.

5. Collaborate in establishment of a poisoning control program, by such means as cooperating with physicians and hospital staffs to conduct poisoning information and control centers.

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* Home Accident Prevention—A Guide for Health Workers.

Unit Which Licenses Boarding Homes and Other Facilities

1. Cooperate with the housing unit and other agencies in studying accident hazards in boarding houses, day nurseries, and all domiciliary care projects.

2. Inspect boarding houses, before issuing licenses, requiring necessary construction or repairs to eliminate hazards.

3. Make recommendations for regulations concerning the staffing and daily operational program of nursing—and foster home care of children and chronically ill or aged to insure as safe practices as is possible.

Health Education

1. Encourage and assist community groups with a normal interest in home accident prevention to consider home accident prevention as a part of their programs. Work with groups such as the safety council, the medical association, the Red Cross Chapter, the Parent-Teachers Association, insurance agencies, industrial groups, and youth agencies, to promote community organization for home accident prevention.

2. Assist other units of the health department and other official agencies to develop effective home accident prevention education.

3. Prepare news releases, special articles, and speeches for mass education and for use of health officer and other staff members.

4. Assist in the evaluation of community-wide communication channels for effective dissemination of home accident prevention information.

5. Encourage schools, especially trade and vocational schools, to incorporate home accident prevention education in classroom work.

6. Assist in the development and implementation of a department-wide in-service education program.

7. Prepare visual aids and literature appropriate to the local situation, as well as a list of sources of information and materials where organizations might get program assistance.

Nutrition

1. Study accident hazards in the kitchen relative to food preparation.

2. Advise housewives on the proper use and storage of utensils and on proper wearing apparel for the kitchen.

3. Work with public health nurses, health educators, and sanitarians in publicizing safe practices.

4. Establish liaison with manufacturers of stoves and other kitchen equipment, or their sales representatives, and public utility service representatives to promote safe use of equipment in homes and the development of improved equipment.

Mental Health

1. Study accidents to determine the emotional factors that contribute to accident causation and make recommendations for implementation of this knowledge by health department personnel.

2. Incorporate into mental hygiene teaching what is known about the influence of hurry, preoccupation, narcotics, and alcohol on liability to accidents.

Dental Health

1. Emphasize the prevalence of accidental injuries to teeth and jaws and suggest means of preventing such injuries.

Summary

Home accident prevention is a "team" activity. It is an activity that should not be delegated to any one person, to any one unit of a health department, nor in its entirety to any single agency or organization.

There is a genuine need for each community to determine the characteristics of the local home accident prob-

lem and to evaluate home accident prevention activities as they are conducted.

It would be unwise to postpone the initiation of home accident prevention activities on the assumption that some miraculous solution to this problem will be discovered. There is no likelihood that any drug will be synthesized that will prevent accidents. It is much more likely that there will be a slow but steady increase in the amount of participation in home accident prevention activities by many persons and local organizations.

To be effective such a community-wide or state-wide program will require the official participation of and guidance by local and state health departments, every staff member of which will have an important role to play.

The inauguration of a home accident program in your state and in your community will mark another step toward the goal of a substantial reduction in the number of home accidents. It also will emphasize the responsibility of the health department to attack all major causes of death and disability in the community and the need to respond to the changing importance of public health problems.

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Expanding PHS Commissioned Reserve

The Surgeon General of the U. S. Public Health Service, Leonard A. Scheele, announces that the Service's Commissioned Reserve is being expanded "to increase the nation's readiness to meet the unusual public health demands of national emergencies." Therefore, he encourages qualified personnel in public health and preventive medicine to apply for commissions. Personnel eligible are physicians, nurses, sanitary engineers, dentists, veterinarians, pharmacists, psychologists, psychiatrists, bacteriologists, microbiologists, statisticians, medical record librarians, and "any other professional health specialists who can meet the requirements."

A COMMITTEE REPORT

Cooperative Formulation of School Nurse Functions

Committee on School Nursing

School Health Section

Following the American Public Health Association meeting in 1952 the Executive Council of the School Health Section decided that some attention should be focused on problems relating to school nursing. In March, 1953, a Committee on School Nursing was appointed by the section chairman, with representation from eight states. The nine appointees, all members of the APHA, included physicians, nurses, and health educators. No special assignment was given to the committee other than to explore the field to determine the greatest need in the area of school nursing and to formulate a plan of action to meet this need.

In discussing this problem with school, health, and medical personnel, and especially with public health and school nurses, there was common agreement that the major problem was the clarification of the function of the nurse in the school program. It was decided by the committee, therefore, that a project should be set up whereby it would be possible:

1. To aid in the development of a better understanding of the nurse's role in the school program.
2. To promote joint planning for the most effective use of the nurse's time in the school.
3. Indirectly, to aid in the improvement of the school health program.

As a means of making an effective study on the role of the nurse in the school program, the committee developed a guide for use by a team of persons in discussing and analyzing the situation in a particular school. A minimum team included: the nurse serving the school, an administrator, a physician, a parent, and a teacher. (As a rule the teams were larger and more representative.)

In the remaining months of 1953 a pilot study was conducted on a limited basis to test the effectiveness of the proposed plan. Each committee member was responsible for organizing team conferences in as many representative areas as possible. Forty-two forms were received and 32 were used as valid forms from 11 states. Conferences were held in rural and urban schools and represented programs served by public health nurses, as well as specialized school nurses.

The results of the pilot study certainly indicated that the technic did increase understanding and cooperation among school, health, and medical personnel. It was anticipated that

This report of the committee was presented at the Eighty-Third Annual Meeting of the American Public Health Association in Kansas City, Mo., November 18, 1955.

further investigation would substantiate the findings and clarify the issues involved in the role of the nurse in the school. Possibilities were noted for use of this technic in orientation of new nurses in the school program and, with modification, in other fields.

The committee recommended at the 1953 Annual Meeting that the study be continued with special emphasis on determining the attitudes of members of the teams toward the conference technic. According to the Section Council of the School Health Section the problems brought out in the pilot study warranted further investigation and the committee was asked to continue its work.

Following this meeting much time was spent in discussing the project in open committee meetings and in conference with interested individuals. Many suggestions were received for the revision of the guide and the continuance of the study.

At the 1954 meeting in Buffalo the committee again held open meetings and was given a great deal of assistance. The number of people participating in these open meetings and their enthusiasm indicated the widespread interest in the problem.

The work of the committee continued in the local areas by advisory groups and interested persons working under the leadership of the committee member. Teachers, parents, nurses, administrators, physicians, and others were actively involved in the revision of the guide and plans for the study. Each committee member had evaluation conferences and sent information to the chairman for use in tabulating the results.

During the three years of this investigation many changes have necessarily taken place in the personnel of the committee. There were resignations due to position changes and job responsibilities. Because of the nature of the study it was not always possible to replace members, especially during the last year. The study finished with seven members on the committee.

For various reasons, notably the Salk polio immunization program, some of the committee could not finish their programs in time for this report. However, each of these persons spent many hours developing and administering the study. This report is based on studies from four representative states—Illinois, Virginia, Rhode Island, and Ohio.

Procedure

Instruments

After it was decided to test the technic of team evaluation four instruments were developed for use in the study.

A directional sheet provided information on organizing and conducting the team conference. A team sheet listing names, addresses, and positions of team members, with name, location, and type of school and nursing program, furnished information to the chairman of the School Nursing Committee for possible follow-up. The evaluation guide was set up in three columns—"Basic Needs," "What Is Our Situation?," and "Suggested Changes," an adaptation from "A Guide to a Community Health Survey" developed by the Committee on Administrative Practice of the APHA. The information obtained by this form was kept in the local area for use in the development of their own program. A reaction form, designed for individual evaluation of the technic by persons participating in the team conference, was the basis for the findings in this report.

Team Conference

Probably the most important phase of the study was the team conference. The way in which it was organized and conducted greatly influenced the effectiveness of the study. As an aid to com-

mittee members the following suggestions were made:

1. That each committee member have a local advisory committee with representation of teachers, nurses, physicians, parents, administrators, and other interested individuals.
2. That each state send the completed reaction forms from at least six evaluations, representing the kinds of programs within the state; namely, rural and city schools, with programs under generalized and specialized nursing.
3. That in selecting schools the committee member or his representative contact the school administrator and the medical director to determine their interest in having an evaluation, and if interested, to discuss detailed plans, such as: appointment of a chairman (it was suggested that the chairman be someone other than the nurse) and a recorder; selection of team members, and place and time for the conference procedure.
4. That the chairman be supplied with the guide and other forms well in advance of the team conference so that he might review the contents and be able to summarize the "Basic Needs."
5. That immediately following the team conference the reaction form be completed by each participant, these forms to be kept together and sent to the chairman for tabulation.

Some Findings

As mentioned earlier in the report materials from four states—Illinois, Rhode Island, Virginia, and Ohio—provided the basis for the findings. One hundred and thirty-six people participated in the "experimental" conferences and completed the reaction forms. The total was composed of seven subgroups, as follows:

Nurses	35
School administrators	25
Classroom teachers	19
Parents	19
Special teachers	17
Others	11
Medical personnel	10

The "others" group included two psychologists, two guidance coordinators, an elementary supervisor, a secretary, a representative of the PTA, a visiting teacher, a physical education teacher, an assistant to the medical director, and one not specified.

The reaction form consisted of 12 questions; numbers 1 to 9 were coded as follows:

None	0
Little	1
Some	2
Much	3
Very much	4

Answers to questions 10, 11, and 12 were to be written out. In the coded responses 3 and 4 were considered very favorable.

Analysis of the Study

The results of a few key questions from the reaction form are presented.

Question: To what extent did the team discussion lead to better understanding of the nurse's role in the school health program?

Favorable opinions:

	Per cent
Total group	76
Parents	95
School administrators	88
Nurses	60

Question: Did you feel that each team member had an opportunity to participate freely in the discussion? Yes .... No .....

The answers to this question were most favorable—130 out of 136.

Question: Is this the first time a joint committee (representing parents, school, and health personnel) has met to discuss the school health program? Yes .... No ..... If "No", how many such meetings have been held within the last two years?

The medical directors had the highest percentage of "yes" answers, while the nurses had the lowest percentage. Thus, the nurses indicated that they had attended more joint committee meetings to discuss school health problems than had the other groups.

Of the individuals answering "No" to

the question, very few indicated the number of meetings held within the last two years. The few answers to the question ranged from "several" and "periodically" to as high as 12.

Question: To what extent do you think it would be helpful for this same group to meet later to follow through on any suggested plans?

Sixty-four per cent of the total group indicated that they felt it would be helpful for the group to meet later. The parents seemed most enthusiastic about future meetings while the classroom teachers seemed the least.

Question: To what extent has the team discussion stimulated interest in: (1) continuing appraisal of the school health program, and (2) interpretation of the role of the nurse at teachers' meetings, PTA meetings, and other?

Seventy-six per cent of the total group responded favorably to (1) continuing appraisal of the school health program. The parents as a group showed the highest favorable reply with 94 per cent; "others" scored lowest, with 45 per cent.

Question: From the discussion of "Basic Needs" in the guide check any of the following practices that are likely to be incorporated in your school health program:

Emergency care program	61
Use of the nurse as a resource person	61
Planned teacher-nurse conferences	60
School health council	48
Screening programs	44
Scheduled visits of nurse	42
Others	7

According to the opinion of the group the practices most likely to be incorporated into the school health program were emergency care program and planned teacher-nurse conferences. The latter were highy favored by administrators, physicians, classroom teachers, and parents. The former were favored by administrators, physicians, nurses, classroom teachers, special teachers, and parents.

Reaction Form—Strengths and Weaknesses

The final three questions in the reaction form were to indicate strengths and weaknesses of this study method. Certain comments recurred often in the team participants' answers. Here is a sampling of those showing strengths:

. . . gave all of us a better understanding of the nurse's role in the school and the contributions that other school personnel make.

. . . first time a group has come together to discuss our health problems. It gave us an audience in which to "air" our problems.

This experience gave all of us a better understanding of the school health program and how we can work together effectively.

. . . brought out to the team the need for better use of the physician's time and a great need for his assistance.

. . . pointed out specific health needs.

Compares our school program with a standard.

Problems were brought out that were unknown to me (physician).

Strengths Revealed in the Committee Members' Activity Summaries

Questions were raised as to the effectiveness of present practices and stimulated thinking about them.

The experience gave impetus to getting a good program planning group.

Group evaluation was found to be superior to individual evaluation.

. . . provided an opportunity to freely discuss immediate and long-term plans for health improvement.

. . . improved relations among parents, medical, and school personnel.

The group brought out many ideas not likely to be formulated by an individual.

In three team evaluations in our state, it was brought out that this was the first team evaluation; and they hoped that more would be held. The group felt that it was the first time they knew anything of the health program in their schools.

The weaknesses of the technic were indicated in the following comments:

Questions in the guide were not explicit enough.

More specific information should be given on the use of the guide and on team reporting.

. . . took too long. People got sidetracked, especially on minor issues.

Time did not permit thorough evaluation and discussion.

"Bonus" Findings

Group discussions and written statements also brought out some important findings on the over-all school health program. Appearing in numerous forms were these needs:

A school health committee
Teacher-nurse conferences
Parent representation in planning school health programs
Better understanding of the school health program and the role of school personnel
Better understanding of community facilities and resources available for school programs
Written school policies
Better use of school health records

Summary of Findings

1. The team conference when properly organized and conducted and using the guide as a tool leads to a better understanding of the role of the nurse in the school and helps to clarify the responsibilities of others in the school health program. Ninety-five per cent of the parents and 88 per cent of the school administrators indicated this was true.

2. Many of the participants indicated this was their first time to meet with a joint committee to discuss their school health program. The medical personnel had the highest per cent, the nurses the lowest.

3. Sixty-four per cent in the study indicated that it would be helpful to have follow-up meetings. Parents were the most enthusiastic, teachers the least.

4. This team discussion technic stimulated interest in a continuing evaluation of the total school health program with 76 per cent of the total group favoring the activity. The parents as a group showed the highest favorable reply with 94 per cent.

5. The practices most likely to be incorporated into the school health programs were:

Development of an emergency care program
Planned teacher-nurse conferences
Use of the nurse as a resource person
Continuation of joint meetings

6. The strengths of this study technic outweighed the weaknesses.

7. Study of the nurse's role resulted in some major findings about the over-all school health program.

Conclusion

Working together works best. This is perhaps our major conclusion from studying the nurse's role in the school health program. The team approach raised the nurse's status, helped her to see total school problems, and permitted school, community, and health representatives to exchange ideas. The study method evolved has been shown to be effective and useful, though modifications may be in order.

It is recommended that the American Public Health Association make this guide available for use by schools and communities.

FLORENCE L. FOGLE, Ohio State University, Columbus, Ohio, Chairman
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A COMMITTEE REPORT

School Health Service Statistics

Committee on School Health Service Statistics

School Health Section

The Committee on School Health Service Statistics was formed during the summer and fall of 1952. As of November, 1955, the membership included:

ALAN FOORD, M.D., Johns Hopkins University, Baltimore, Md., Chairman
EVELYN FLOOK
GEORGE C. STAFFORD, Ed.D.
MATTHEW L. TAYBACK, Sc.D.
ALFRED YANKAUER, M.D.

Following preliminary correspondence the committee held a meeting on May 5, 1953, attended by four of its six members. A report was compiled from the deliberations of this meeting and the suggestions made by mail, and was presented at the 81st Annual Meeting of the APHA, November, 1953. This report has now been revised as a result of (1) suggestions made at the open meeting two years ago, (2) careful review by committee members, and (3) actual experience with some of the suggested methods in the Baltimore school health program.

The revised report of the committee which follows is intended, as was the previous report, to:

1. Show some of the pitfalls and fallacies inherent in the way school health statistics are often kept.
2. Define reasons for keeping school health service statistics.
3. Outline those statistics which should be of value to most school health services as a means of appraising the adequacy and efficiency of the program.
4. Suggest general policies and procedures for accumulating such data which individual school health services may adapt to their needs.

This report of the Committee on School Health Service Statistics was presented at the Eighty-Third Annual Meeting of the American Public Health Association in Kansas City, Mo., November 18, 1955.

Present Status of School Health Service Statistics

School health service reports from several states and cities were reviewed. These reports were found to follow a generally similar pattern in that each attempts to show the amount of service rendered in terms of number of pupils examined, vaccinations and inoculations given, and abnormalities found by system involved. A separate tabulation of defects or abnormalities corrected during the school year is often given but with no designation of whether they were diagnosed during the same or during a previous school year. The amount of time spent by the nurses and physicians in the school program is reported by some, as are the results of screening programs for tuberculosis, vision, or hearing. Reasons for exclusions and absences are frequently tabulated as evidence of communicable disease control.

School health service reports are made by either the health department or the

education department or sometimes by both, either as a combined or separate effort. The important factor is not which department makes the report, but that it be a cooperative effort to insure an accurate and complete picture of the population served and the service rendered, with the department which actually gives the service assuming the responsibility for accumulating the statistical data needed.

Notable omissions in the reports reviewed were:

1. A statement of the population covered, i.e., how many pupils are there to be examined?
2. A statement of how many pupils were not examined that should have been.
3. A separation of the defects or abnormalities tabulated into those needing correction and those either not needing correction or being such that further correction is not advised or not possible.
4. Correlation of the abnormalities found with those corrected—too often the tabulation of corrections includes corrections of abnormalities discovered in previous school years.

It is usual to find a report which states how many children were examined during the school year and of these how many were found to have abnormalities. It is unusual, however, to be able to tell from the report:

1. Which of the abnormalities tabulated could not be or did not need to be corrected, for example, the child with a paralyzed limb already under adequate orthopedic care, or the one who is blind in one eye, but has normal vision in the other.
2. Just what happened to those abnormalities found and judged as needing correction—in other words, how many were corrected, how many were subsequently considered as not needing correction, and how many remain uncorrected and why.
3. How much attention is given to health and accident-prevention educational activities including teacher-nurse conference and the time devoted to these by health personnel.
4. The extent of unmet emotional needs in the student group. (Both the recognition and the enumeration of emotional needs present obvious problems which have yet to be adequately solved.)

Function of School Health Service Statistics

School health service statistics should serve as follows:

1. To demonstrate the health and medical care needs of the population served.
2. To show how adequately these needs are being met.
3. To provide some measure of the amount of service being rendered and the amount of time physicians, dentists, nurses, teachers, and other health personnel devote to the school's health service program.
4. To provide data for health education.
5. To indicate at least roughly the amount of health service time devoted to such health education activities as teacher-nurse conferences and physician, dentist, nurse, and health educator participation in faculty and PTA meetings.

If the information required under these five headings is kept accurately, it may be used to justify expenditures for the program and to demonstrate any need for increase or decrease in personnel. It should also serve to show whether or not all available health resources are being used to promote better health among school children.

Unfortunately there often is a tendency to accumulate impressive lists of abnormalities discovered (the needs) without making a comparable effort to show by careful follow-up exactly what is done about them (how adequately the needs are being met). The expenditure of public funds and personal effort for careful health examinations of school children is clearly justified provided such examinations uncover abnormalities (including emotional ones) needing correction which otherwise would go unnoticed or uncorrected or both, and provided these abnormalities are then followed through to correction. The number and kind of abnormalities discovered and the number corrected, of those needing correction, can be systematically documented. The value of health examinations in terms of health

education and reassurance to parents and teachers is much more difficult to demonstrate quantitatively.

What Statistics Should Be Kept

The data to be accumulated relative to school health services will, of course, depend largely upon the type of program. Some statistics will, however, be fairly common to all programs and some will be more useful than others. In addition, statistical reports from various other divisions or bureaus of the health department may be used, such as the morbidity and mortality reports for the age group involved, reports of all types of accidents, including school, home, and community, and estimates of future school populations.

In general the information gained from the items listed below is useful in planning, administering, and evaluating a program. The relative usefulness of each item suggested should, however, be reviewed critically by the administrator of the program, and the collection of statistics relative to the item should be relegated to a periodic spot-check procedure if the information derived therefrom is not clearly valuable on an annual basis. The items marked with an asterisk are suggested for such spot-checks at periodic intervals. A plan of rotation can be worked out so that each year study of two such items may be initiated to last for the next three years. Thus data on each item would be accumulated every three years instead of annually.

The following items are suggested for inclusion in school health service statistics:

1. The time spent by physicians, health educators, and nurses working in the program.

2. The school population served by grade and type of school (public, parochial, or private).

3. The number of pupils in each category above who should receive health examinations during the school year (or inspections if a history and physical is not done).

4. The number of pupils actually examined during the school year by the school physician and the number examined by private physicians.

5. Differentiation of those who should receive and those who do receive examinations according to whether they represent a routine examination of a new pupil, a periodic reexamination, a referral from teacher or nurse, the reexamination of exceptional children, or of special groups such as athletes.

6. The number of these health examinations in each school at which parents were present.

7. Of the pupils examined and subdivided according to whether the examination was done by the school physician or by a clinic or private physician, how many had no abnormalities, how many had abnormalities needing correction, and how many had abnormalities not needing correction or already under care.

8. Number of pupils needing inoculations and or vaccinations and the number actually receiving this service from (a) school physicians and (b) private physicians. (Data showing where more emphasis may be needed, e.g., smallpox vaccination not repeated for seven years.*)

* 9. Number of contacts between school health staff and private physicians.

10. Approximate time spent by school physicians in conferences with teachers, faculty groups, or PTA groups.

11. Number of teacher-nurse conferences.

12. Amount of time devoted to health and accident prevention education.

13. Number of home visits and parent conferences or an estimate of time spent by the nurse in each of these activities. (Correspondence with parents to promote correction of defects.*)

14. Results of screening programs for vision, hearing, or tuberculosis in each type of school.

15. A separate report of the dental program sufficiently comprehensive to fulfill the five functions listed on page 637.

16. Tabulation of reasons for absences and exclusion in general groupings and subdivided by type of school.

17. Tabulation of accident reports and study of causes by school administration. Time devoted to administering first aid and by whom.

18. Tabulation of the abnormalities (other than dental caries) diagnosed, referred to in paragraphs 7 and 14, according to system involved and disease diagnosed. The number

* Items so marked are suggested for spot-checks only.

still uncorrected after a given time (roughly one school year) and the number lost to follow-up should be shown in the same tabulation. In addition, some rough breakdown of the reasons for no correction should appear in the table.

* 19. Type of records kept (a) cumulative health record, (b) teacher's record of physicians' findings, or (c) pupil's medical record.

* 20. Comparison of health status found when pupils are reexamined with that found at the first examination. For example, the results of a periodic fourth-grade examination can be utilized to answer the following questions: (a) If a condition was found at the time of the school entrance health examination which needed correction, has it been corrected? If not, why not? (b) If a previously unnoticed condition is discovered at the periodic fourth-grade examination, could this condition have been discovered sooner either in the initial, first-grade examination or through teacher observation in the interim?

Suggested Procedures for Collecting School Health Service Statistics

The administrator of the school health service will have to turn to various sources for statistical data. The time spent by physicians working in the program usually will be known to him, but he will have to ask the director of public health nursing to supply an estimate of nursing time devoted to school health work unless the program includes full-time school nurses. (This information, though no measure of quality, is necessary in determining the cost of service.)

The population served, broken down by type of school, color, and grade will have to come from principals or school nurses.

A. Physician's Daily Report (Page 638, items 3, 4, 5, 6, 7, 8, and 10)—The number of pupils examined (as a result of routine or referral), inoculated, and vaccinated is easily reported by the school physician on a day-to-day or weekly basis. This report can also include the number of pupils without abnormalities and the number with abnormalities subdividing the latter into those needing and those not needing correction. The number of parents present for school health examinations, the number of phone or personal contacts with parents who were not present when their children were examined, and the time spent in consultation with faculty members or private physicians may be a part of this daily report also. (See sample form.)

B. Nurse's Periodic Report (Page 638, items 2, 4, 11, and 13)—Periodic reports from the school's public health nurse made at mid-term and at the end of the year can include the number of pupils in the population and how many of these have been or still need to be examined, inoculated, vaccinated, or put through the various screening programs. This report can provide the information on how many of the examinations, inoculations, or vaccinations were carried out by private physicians; it may also include a statement of teacher-nurse conferences, home visits, and time spent in health educational activities.

C. Other Reports (Page 638, items 14, 15, 16, and 17)—A summary of reasons for absences or exclusions may be done periodically on a school basis or duplicate slips sent to the central office at the time that exclusions are made and tabulated there for the school year. Dental and screening programs should be reported separately by those in charge of the service and the tabulation of accident reports should be supplied by the school administration.

D. Report of Abnormalities and Follow-Through (Page 638, item 18)—The report of abnormalities and their follow-through offers a special problem as it is clear that this should be done on a case basis which provides not only an accurate statement of what the school physician found but also a statement of what the private physician or clinic

* Items so marked are suggested for spot-checks only.

BALTIMORE CITY HEALTH DEPARTMENT
DIVISION OF SCHOOL HEALTH

SCHOOL PHYSICIAN'S DAILY RECORD

Name ..... Date .....

School ..... Time of Arrival ..... A.M. P.M. Time of Departure ..... A.M. P.M.

Pupil's Parents or Guardians Present for Examination (do not include parents bringing children for inoculations only)	Mothers	Fathers	Guardians

Pupils Examined	Number	Number without Abnormalities	Number with Abnormalities	
			Needing Correction	Not Needing Correction
1. Teacher-nurse referrals to school physicians				
2. Routines (new to school system)				
3. Routines (reexamination 4th grade)				
4. Rechecks of exceptional children				
5. Rechecks requested by school physician				

Pupils Inoculated Against Diphtheria, Whooping Cough and Tetanus	Initial			Booster	Total Pupils
	1st.	2nd.	3rd.		
1. Preschool					
2. School					

Pupils Vaccinated Against Smallpox	Initial	Repeat	Total Pupils
1. Preschool			
2. School			

Conferences with School Personnel	Approximate Time Spent
1. Principal	
2. Teacher	
3. Social worker	
4. * Other—specify	
Contacts with Pupils' Private Physicians	
Review of Records of Pupils Examined by Private Physicians	

* Write in whether faculty or PTA meetings, division of school health meetings, or other.

Signed .....M.D.

BALTIMORE CITY HEALTH DEPARTMENT
DIVISION OF SCHOOL HEALTH

RECORD OF SCHOOL HEALTH SERVICES BY CLASSROOM

School, number or name .....

School Year 19 to 19 Grade Room Teacher

Dates of Formal Teacher-Nurse Conferences									
Dates of Teacher-Nurse Consultations									

1.	2.			3.			4.								5.		6.	7.
Pupils' names and name or number of school (nursery or otherwise) each attended last year if other than this school.	Should have been examined last year			To be examined this school year			NEED D. P. T. INOCULATION								Smallpox vaccination		Lost to follow-up by withdrawal or transfer	Date and school to which record transferred
							Should have been given last school year				Should be given this school year							
	By school M.D.		Routine by priv. M.D.	By school M.D.		Routine by priv. M.D.	Initial		Booster		Initial		Booster		Initial	None for seven yrs.		
	Refer	Routine		Refer	Routine		Sch. M.D.	Priv. M.D.	Sch. M.D.	Priv. M.D.	Sch. M.D.	Priv. M.D.	Sch. M.D.	Priv. M.D.				

diagnosed later, what was done about the condition diagnosed and, if nothing was done, why. The common practice of reporting abnormalities corrected during a given school year without reference to the year and the population in which they were discovered should be discarded as grossly inaccurate.

In order to report abnormalities discovered with reference to the population concerned and the follow-up work done, a record of each pupil found to have an abnormality or of each abnormality found must be made out and kept in the child's school until (1) follow-up is complete, or (2) a reasonable time has elapsed to permit completion of the follow-up work. Thus if reports are made on the basis of a school year, reporting of the types of abnormalities found and results of the follow-up work should be postponed at least until the following December, allowing six months from the time the last examinations were done (in June) for consultations and corrections to be obtained. (The number of pupils examined by the school physician and a statement of how many of these did or did not have abnormalities will be known already from the school physician's daily report and the nurse's periodic report will have disclosed how many pupils were examined by private physicians.)

If the school system is a large one, IBM mark sense cards will simplify this approach to reporting abnormalities, but whether this type card is used or not, it probably will be necessary to make out a separate card for each abnormality instead of one card for each pupil because of the volume of data which will be encountered for those pupils who have multiple abnormalities.

Whether an IBM card or some other type of record is used it should be such that the nurse can quickly and easily code on it the following items:

1. The pupil's name and grade.
2. The school.
3. The date the abnormality was discovered.
4. The date the abnormality was corrected or, if still not corrected, the date of this report.
5. The initial findings of the physician (emotional problems should be included). (Physician to code this.)

6. The final diagnosis after consultation with clinic or private physician.
7. Whether or not correction of the abnormality was needed.
8. Whether or not correction was obtained.
9. If correction was not obtained, why, or a positive statement of "final disposition."

It is suggested that dental caries not be included in this report as its prevalence is well known and including it would duplicate the reporting of the dental program.

The tabulation of these records of abnormalities and follow-through is probably best done centrally, rather than expecting a complete report from each nurse in each school, thereby greatly increasing the time she must spend doing clerical work.

Conclusion

School health service statistics as presently kept seldom give an accurate and clear picture of the services rendered. The committee has attempted to outline what statistics should give a more accurate picture, first having considered the reasons for or usefulness of each major item suggested. Possible procedures for collecting such data have been outlined and examples of forms for reporting them are presented. It is hoped that the work of this committee may serve as a step toward achieving general agreement regarding the kinds of information which will reveal accomplishments and gaps in school health services.

Expediting Requests for Small Research Grants

The Public Health Service announces a new procedure to expedite the processing of research grant applications for those requests that do not exceed $2,000 plus indirect costs and that do not ask support for more than one year. Such applications are now accepted and processed on receipt and are not therefore subject to the usual deadlines for submission prior to review. Recommendations of the National Advisory Council can be expected on such applications within one to four months from the time of submission. The new procedure does not apply for requests for supplements to existing grants.

Address all applications, as well as requests for forms or additional information, to the Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

A COMMITTEE REPORT

Statement on Chemical Additives

Committee on Chemicals Introduced in Foods

Food and Nutrition Section

The existing federal Food, Drug, and Cosmetic Act prohibits the use of unnecessary and avoidable poisonous or deleterious substances in our food supply and provides for the establishment of safe tolerances for those which are necessary or which cannot be avoided in good manufacturing practice. Legislation pending before Congress would remove the outright prohibition of toxic chemicals in foods, regardless of amount, and adopt the concept of establishing tolerances for harmless amounts of toxic materials in foods, where there would be an advantage to justify such additions.

The several bills introduced in Congress vary in many respects. A basic question is whether the safety decision is to be made administratively before the chemical additive may be marketed, subject to the safeguards of administrative hearing and judicial review on the scientific record, or whether, if the opinion of the enforcing agency evaluating the additive is adverse, the sponsor of the chemical should be free to market the potentially harmful product subject to the risk of injunction or other legal action by the government.

The Section Committee specifically has approved the following statement of its position regarding any legislation to deal with chemical additives to foods:

Position Statement

1. Because this committee (of the American Public Health Association) is composed entirely of scientists, who are concerned with the health aspects of the subject under consideration, the committee desires to limit its statement to the general objectives of any proposed bills that deal with additives to foods. The committee believes that a decision as to the safety of new additives to foods involves application of scientific knowledge and judgment to establish facts. Reliance upon such expert knowledge is essential and legislation enacted should be written with this view in mind. The legislation should apply to all foods, whether these foods are intended for domestic or foreign commerce.

2. The committee is in accord with the statement of general principles adopted by the Food and Nutrition Board of the National Research Council, November 5, 1954, which reads:

a. A decision to use an intentional additive in foods should be based on the assurance (a) that it will be safe, and (b) that it will benefit the consumer.

b. Results of critically designed tests of the physiologic, pharmacologic, and biochemical behavior of a proposed additive made in various species of animals can provide a basis for the evaluation of the safety of a chemical at a specified level of intake by man. It is impossible, however, to establish absolute assurance that the additive at this level will be completely safe for all human beings under all conditions.

This report of the committee was presented by Glenn G. Slocum, Ph.D., chief, Division of Microbiology, Food and Drug Administration, Washington, D. C., at the Eighty-Third Annual Meeting of the American Public Health Association, Kansas City, Mo., November 18, 1955.

c. Additives should be subject to continuing observations for possible deleterious effects under prolonged and varying conditions of use and should be reappraised whenever indicated by advances in knowledge.

d. The safety of an additive should be appraised in terms of the minimal level of physiologic response, of the extent of its use in foods, and of the amounts that may be eaten under all likely patterns of consumption. No substance should be added to a food if there appears to be a reasonable probability that the maximum amount likely to be consumed in the human diet will produce adverse deviations from normal physiologic function.

3. The committee is also in accord with the statement by the same body that "In order to judge the safety of the use of an additive in the light of these principles, information must be obtained on: (a) the chemical and physical properties of the additive and, when possible, the forms to which it may be converted in the food product; (b) the biologic effects of varying dosages of the additive and its conversion products, including toxicologic, metabolic, and nutritional effects; and (c) the anticipated levels and patterns of consumption." It is imperative that the detailed protocols so obtained be submitted to the body charged with enforcement of such legislation.

4. The committee wishes to point out that the proposed legislation which has come to its attention apparently does not adequately cover the chemical changes resulting from radiation effects on foods or the new methods of processing.

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* Deceased.

23 New Markle Foundation Scholars

The John and Mary R. Markle Foundation has appointed 23 scholars in medical science for the year 1956. The 23, selected from 49 candidates nominated by medical school deans, are faculty members of 22 medical schools in 16 states and one in a Canadian school. A total of $690,000 has been appropriated, which will be granted to the schools at the rate of $6,000 annually for five years for each appointed scholar. Seven of the scholars represent internal medicine, four, pediatrics, three each biochemistry and surgery, two, physiology.

During the nine years of the "Scholars in Medical Science" program, 181 faculty members in 69 medical schools have been helped "up the academic ladder" with total appropriations of nearly five and a half million dollars.

Clearing House on Public Health Salary Information and Personnel Needs

Public Health Nurse Salaries in 1955

The 1955 survey of public health nurse salaries by the National League for Nursing was summarized in Nursing Outlook for January, 1956. The study is based on questionnaires returned from 778 nursing agencies, nearly two-thirds of the 1,205 sent. The number of agencies and of nurses represented in the several categories of agencies is as follows:

Agency	Number of Agencies	Number of Nurses
Total	778	12,192
Official health departments		
State	44	1,540
Local	247	5,627
Nonofficial agencies	190	2,924
Boards of education	297	2,101

Says the summary, "The effect of the continuing widespread general increases in salaries has been reflected in public health nurses' salaries." The percentage increase in median salaries between 1951 and 1955 varies from 18 per cent for nurse directors in nonofficial agencies to 39 per cent for the same position in local official health units. Highest over-all median salaries are found in the Pacific Coast area.

Additional detailed information may be obtained from the National League for Nursing, 2 Park Ave., New York 16, N. Y.

An Aid to Social Work Recruitment

An Advisory Center on Careers in Social Work has been established in New York City as one of a number of pilot projects in social work recruitment stimulated by the Council on Social Work Education. Sponsored and in part supported by the four local schools of social work, the chapters of the National Association of Social Work, the Welfare and Health Council, and the Protestant, Catholic, and Jewish welfare federations of the area, the center is designed primarily as a source of information about the social work profession.

It hopes to get wide citizen understanding of the profession, to stimulate young people in the area to enter the field, to keep social agencies informed as to recruitment and personnel developments, and to coordinate recruitment activities in the New York metropolitan area.

It is sponsoring and arranging for summer experience in social work in local social work agencies for some 35 students during the 1956 vacation period. A citizens' conference for interpreting social work to the layman is also planned.

In addition to the support of the sponsoring groups, a $30,000 grant from the Ittleson Family Foundation has made the activities of the center possible.

Other cities in which similar centers have been organized are Baltimore, Boston, Cleveland, Philadelphia, Providence, and Richmond. A similar movement is developing in Texas, presaging the eventual goal—a Careers in the Profession of Social Work organization in the larger population centers of the country, and serving the surrounding areas.

Alpha Pepper is executive secretary of the center, 144 East 44th St., New York City.

A Useful Merit System Report

The two-year progress report of the Arizona Merit System Council sets out to be "a frank appraisal of progress made—or not made—in the attainment of a fully adequate merit system program of personnel administration." It serves also as a summary of principles guiding a merit system program and recognizes the pitfalls into which it may fall. It is a clear, concise report that is not used primarily as a vehicle of self-congratulation.

In Arizona the merit system was organized in 1943 jointly by three of the state government departments—health, welfare, and employment security. Approximately 850 employees are covered by it. The merit system supervisor is John M. Posegate, Phoenix.

Practical Nurses Expand Recruitment

The National Association for Practical Nurse Education, through grants of nearly $134,000 from 21 foundations, has been able to expand its services, particularly the recruitment of practical nurse students and the consultation about curriculums and facilities with schools of practical nursing. The association is the accrediting agency for the 400 schools of practical nursing in which some 15,000 students are enrolled.

Field representatives stationed in several regional offices the country over are carrying out the enlarged program. Among its goals are the stepping up of the number trained in the schools from 15,000 to 60,000.

Hilda Torrop is executive director of the association, 654 Madison Ave., New York 21, N. Y.

Data on Scientists and Engineers

For those who have responsibility for keeping abreast of personnel resources the National Science Foundation has recently published three reports that give a good deal of valuable background data. "Scientific Personnel Resources" is a summary of current information on the supply, utilization, and training of scientists and engineers. A relatively meager amount of information is shown for the medical and health fields "in view of the work already done in this area by other agencies, notably the National Institutes of Health."

The growth of science and technology is dramatically illustrated by a chart showing that between 1870 and 1950 employment in this field multiplied by 85, while population did not quite quadruple, the labor force multiplied by less than five, and the number employed in the professions multiplied by 15.

The second recent volume by the foundation is "Education and Employment Specialization in 1952 of June, 1951, College Graduates." It has a vast amount of detailed tabular information, some of which has relevance for public health. More than 5 per cent of graduates with bachelors' degrees and nearly 3 per cent of those with masters' degrees specialized in health fields. And they stayed in their own specialties more consistently than graduates majoring in other fields; 96 per cent of graduates with bachelors' degrees and 84 per cent of those with masters' degrees specializing in health fields were employed in these areas a year later.

The third is "Shortages of Scientists and Engineers in Industrial Research," which summarizes the results of a survey based on interviews in 200 companies. It includes such subjects as the factor influencing the companies' research expenditures, the extent of research personnel shortages, and other obstacles to effective industrial research. This study was summarized in the September, 1955, Monthly Labor Review and the summary is available in mimeographed form from the Bureau of Labor Statistics, U. S. Department of Labor,

New York Regional Office, 341 Ninth Ave., New York 1.

The two other volumes are available from the Gov. Ptg. Office, Washington 25, D. C., the first at 50 cents, the second at 35 cents.

A Recruitment Piece for Chemists

With "Frontiersman for the Future," a newly formed Education Advisory Committee of the Manufacturing Chemists' Association is kicking off its activities. The booklet, aimed at junior high and high school youngsters, highlights for them a vision of new horizons for pioneers in scientific research, the application of chemistry in everyday living, and some indicators of science aptitude.

The new 15-man committee of the association, largely through the participation of local companies, hopes to develop in school students an appreciation of the role of chemistry in daily living, to interest them in chemical employment opportunities, and to encourage science-talented students to follow scientific careers.

"Frontiersman for the Future" and a reprint from Chemical Week, "Message to Tyros," which explains the new program, are available from Manufacturing Chemists' Association, 1625 Eye St., N.W., Washington 6, D. C.

"Doing" as a Recruitment Technic

"Catch Them Young" is the title of a piece in the winter 1956 issue of the American Heart, an information quarterly of the American Heart Association. Here are told of young men and women undergraduates in 13 colleges and universities of Louisiana, who, through grants of the state Heart Association, carried on cardiovascular research projects.

Among the subjects studied were preservatives for blood-typing sera; effects of adrenochrome on the cardiovascular system of rats; alteration in the heart and blood pressure picture following moderate controlled exercise.

The program was the brain child of Hymen S. Mayerson, Ph.D., head of Tulane University's Physiology Department. Its purpose is to help "interested undergraduates learn research techniques rather than to seek major contributions to scientific knowledge from beginners."

Students receive neither salary nor college credit for their work, but the state Heart Association provides grants for purchase of supplies. Since October, 1950, the cost has been about $2,000 annually; 14 undergraduate research grants have been approved; three of the science students have gone into graduate professional schools, and several others plan to continue their scientific education.

Recruiting Medical Technologists

The spring number of "Cancer News," the quarterly bulletin of the American Cancer Society, devotes seven of its 24 pages to photographs and brief text of the progress of one Anne Allumbaugh from a B.S. in animal hubandry to medical technologist in the University of California Medical Center. The variety of her practical training and work, its importance to the care and cure of the patient, the skill, courage, integrity, and sympathy that are a part of the job are each portrayed interestingly and appealingly. Cancer News, 521 W. 57th St., New York 19, N. Y.

Television in Recruitment

"Your Health" by the Mississippi State Board of Health is a 15-minute television show with three speaking and 15 pantomime parts. Presented monthly, it sets out to show the different jobs that are open in the state and local depart-

ments and the procedures for applying for the job. The pantomimes illustrate some dozen of the 146 job classifications in public health offices throughout the state.

Felix J. Underwood, M.D., is the state health officer, N. C. Knight, M.D., the director of health education, Jackson, Miss.

Cleveland Surveys Fringe Benefits

Fringe benefits in the form of bonuses, paid vacations, pensions, insurance, uniforms, among others, are reported to be costing industry in Cleveland nearly 39 cents per man-hour. This was found to be the case in a survey by the Associated Industries of Cleveland of 172 companies employing about 77,000 hourly workers in the city in late 1955. This represents an increase of more than 20 per cent since 1953 in the amount represented by fringe benefits.

For the type of workers that might be employed either by public health agencies or by industry, fringe benefits may be the factor that tips the scales in the competition for workers. Hence, what prevails in industry is not without its effects in the public health as in other professions.

The National Association of Manufacturers makes an annual survey of fringe benefits and their costs that has a wider coverage than the Cleveland survey.

Greater Public Health Productivity?

A member of the salary study subcommittee of the APHA Committee on Professional Education finds a moral in a recent article in a New York newspaper. The article in question is headlined, "Many City Hospital Beds Empty for the First Time." It says, "For the first time in the memory of officials (New York City) there is a continuing daily surplus of hundreds of empty beds in the 30 hospitals and homes maintained by the city. The surplus of 'free care' beds may double or triple in the near future." This "revolution" is due to the new drugs, new development of home care programs, the growth of rehabilitation programs. The salary committee economist believes this is as real an evidence of increasing productivity by public health and allied workers as increased output per man-hour in the factory. His further conclusion is that this increased productivity should be reflected in increased salaries. But, he points out, employees of New York City's health and hospital departments are still underpaid.

Press Helps Tell Recruitment Story

Taking advantage of some good stories appearing, respectively, in the daily Post-Standard of Syracuse, N. Y., and Medical News for physicians of Ciba Pharmaceutical Company, the National Association of Social Workers is distributing two new recruitment pieces.

The first is a reprint of four articles concerning medical social work opportunities as told by a special writer for a daily newspaper audience. The whole series is entitled "Help Others to Help Themselves." The separate stories illustrate the different kind of problems in which a social worker may be called on to give help.

The Ciba stories, one by Dr. Paul Dudley White, pay tribute to the founders of medical social work at the Massachusetts General Hospital in 1905—Dr. Richard Cabot and Ida M. Cannon. Thus the young person is introduced to the pioneer heroes of a profession to which they are invited to give consideration.

These materials, reprinted by the Medical Social Work Division, National Association of Social Workers, are available to career consultants. Consultant on Recruitment, Medical Social Work

Section, National Association of Social Workers, 1700 Eye St., N.W., Washington 6, D. C.

Public Service Pay Rates

The January, 1956, issue of "Pay Rates in the Public Service" was issued late in February. Prepared by the Civil Service Assembly of the United States and Canada, this is a semiannual "Survey of 65 Common Job Classes in a Selected Group of Governmental Jurisdictions in the United States and Canada." Included are 104 jurisdictions, of which a very few are counties. About three-fourths of the states are represented and approximately 50 cities.

Among the job titles of interest to public health are building inspector, plumbing inspector, sanitary inspector, dairy inspector, x-ray technician, clinical laboratory technician, bacteriologist, public health nurse, dentist, and physician, as well as the common clerical positions. By and large state and local civil service commissions belong to the assembly and thus receive this study. In addition, any health department may become an affiliate of the Civil Service Assembly for a $10 fee. An affiliate may purchase a copy of the study for $25. 1313 East 60th St., Chicago 37, Ill.

Public Health Evaluation Discussed

The First National Conference on Evaluation in Public Health was held September 12 and 13, 1955, at the Michigan School of Public Health as one of the short workshops conducted through its Continued Education Service. The proceedings of that meeting, participated in by some 100 persons, are now available.

This conference and its recommendations were discussed in an editorial in the American Journal of Public Health of November, 1955 (p. 1480). Since the conference, a study committee under the chairmanship of Murray Nathan, LL.B., director, Office of Planning, New York State Department of Health, has been established with the charge to develop a uniform terminology.

In carrying out the recommendation for a clearing house forms have already been sent by the Subcommittee on State and Local Health Administration, APHA, to each conference participant for reporting his agency's project in public health planning or evaluation. Vlado A. Getting, M.D., Dr.P.H., professor of public health practice, Michigan School of Public Health, is chairman of this committee. He was also chairman of the Conference Planning Committee.

The conference was sponsored jointly by the American Public Health Association, the Association of State and Territorial Health Officers, the Association of Business Management in Public Health, the Children's Bureau, and the Public Health Service. Proceedings are available from University Publications Distribution Service, 311 Maynard St., Ann Arbor, Mich.; $1.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Canada Studies Chronically Ill Needs

Study of the Needs of Older and Chronically Ill Persons in the City of Ottawa is the result of a year's study in that city. The study was inspired by a report of Mayor Charlotte Whitlin which said in part: "The major emphasis . . . in the development of home supervision and care of the chronically ill or the convalescent . . . should be to continue the individual, or to retain the individual, for as long a time as possible, in the normal community setting and to restrict the expensive hospital unit care for the acutely ill, to those who require it."

The study, directed by Marjorie Bradford, under joint grants by the Department of National Health and Welfare, the Ontario Department of Health, and the City of Ottawa, contains 24 separate recommendations. The first of these indicates the need for further study with emphasis upon refined analysis and technical research.

Among other suggestions are a three-year period of experimentation in which each relevant agency will undertake new projects of its own choosing but with the goal of fitting them in as well as possible with accepted objectives and plans. In this connection a temporary bureau in the City Health Department is recommended both to initiate some direct services and to stimulate and help in follow-up projects.

Disabling chronic illness should be considered a major public health problem with public health methods applied more vigorously to prevention and control. Therefore, the City Health Department is urged to set up a three-year test program of promoting better physical health and nutrition. Expanded service to older people in the city social service department, hospital social services and a plan for nursing referrals, visiting homemaker and housekeeping aids, a pilot project in hospital home care, and a continuing committee to assist with immediate plans are among other plans.

The report is printed on good paper in large type and has appended 10 charts showing significant statistical data concerning the aged and their care. The report is offered, especially to those interested in problems of medical care by R. A. Kennedy, M.D., medical officer of health, Ottawa, who was chairman of the committee on the study. Department of Health, Ottawa, Ont., Canada.

Selected World Dental Literature

"Dental Abstracts," subtitled, a "Selection of World Dental Literature," began publication in January, 1956. In announcing it the American Dental Association stated its twofold purpose as:

1. To provide each month a survey of the significant advances being made by dentistry throughout the world.
2. To supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article.

The first issue abstracts more than 100 articles in nine broad classifications, among them preventive and public health dentistry represented by nearly one-fifth of the entries. Included also is a section for listing doctoral and masters dissertations accepted for degrees.

ADA's library has available for loan to members without charge the articles from which abstracts have been made.

The editor of Dental Abstracts is Lon W. Morrey, D.D.S., who is also editor of the association's journal and director of its Bureau of Public Relations. 222 E. Superior St., Chicago 11, Ill., $6 annually.

School Health Policies Up to Date

"To provide a clear, comprehensive statement of specific school policies which directly or indirectly affect the health of pupils" is the statement of purpose of the third edition of "Suggested School Health Policies." "Written at the level of the school administrator," says the foreword, "because no school policy can be put into effect successfully without his understanding, consent, and action . . . but these statements are addressed to all persons in any way concerned with the health of the school child."

The pamphlet was prepared by the National Committee on School Health Policies of the National Conference for Cooperation in Health Education. This national committee is made up of the representatives of 17 national bodies with interest in health and education. Its chairman is Charles C. Wilson, M.D., who represents the American Public Health Association.

The brochure was published and is being distributed by the Joint Committee on Health Problems in Education of the National Education Association (1201–16th St., N.W., Washington, D. C.) and the American Medical Association (535 N. Dearborn St., Chicago 10, Ill.); 40 cents; reductions for quantity orders.

Televising the Annual Report

For the second successive year the annual report of the Des Moines City and Polk County Health Departments (separate but coordinated and with a single health officer), has been televised with the title, "Yesterday's Tomorrow." The script goes back repeatedly to a quarter of a century ago and the present to show the difference in problems, in services, and in approach. As to the last named education and cooperation has replaced the "big stick" in food and milk sanitation, water supply problems, housing, waste disposal, and sanitation problems generally.

Empty beds in a communicable disease hospital, new attitudes about quarantine, combined voluntary and public health nursing services, well child conferences, districting of services, and home nursing care are among the many changes that have taken place, particularly during the seven-year life of the county board of health. Before this there had been no joint action for the health services of 19 townships and 12 towns. Polk County was the first of the 99 Iowa counties to require that specifications of private sewage disposal systems must be checked by the County Health Department before and during construction. The county is one of three in the state with a county health department.

Abraham Gelperin, M.D., is the health officer of the two departments, Des Moines, Iowa.

Consultant or Policeman

Industrial health is almost the sole concern of the November, 1955, issue of Ohio's Health, monthly publication of the State Health Department. As in the case of health department bulletins generally, Ohio's is designed as a running report to the citizens on what the department does and how it does it. By way of dramatizing its consultant rather than policeman role in factory hazards, this issue reports on a number of actual happenings by file number. In each

case the visit of the industrial hygiene engineer resulted in better conditions along with better feeling in the community either between employee and employer, or in relation to air pollution or other nuisance, that the factory was able to eliminate. The stories are each told in an informal, conversational style.

Making Use of Opportunities

Poison control centers are relatively new in the armamentarium of public health. Likewise, Community Health Week of the Junior Chamber of Commerce is a lusty infant of only three. Milwaukee City and County, through the local Jaycee Chapter with the cooperation of the County Medical Society, concentrated its recent Community Health Week activities on making the poisoning control center and its facilities widely known. Among the things that were done were to station Jaycees in grocery stores and other places to distribute literature about the poison control center, particularly aimed at telling parents how the facilities could be utilized. First aid charts for the medicine cabinet provided by the medical society and the City Health Department were distributed. An information flier was provided by Blue Cross-Blue Shield. News stories were provided for local newspapers and television stations as well as in the state medical and allied journals.

This is an interesting example of tying Community Health Week to a live community project about which it is important for citizens to have wide knowledge and interest.

Preventive Dentistry and Industry

The First District Dental Society (New York City) has sponsored, with the cooperation of the Post-Graduate Medical School, New York University, three annual public health workshops on "Dental Care in Industry." Volume III, "Health Education and Preventive Dentistry in Industry" contains the papers presented at the latest of the workshops in January, 1955. The foreword is by Anthony J. Lanza, M.D., emeritus professor of industrial medicine, Post-Graduate Medical School.

Volumes I and II, "Industrial Dentistry and Public Health" and "Occupational Oral-Health in General Dentistry and Public Health," include the papers of the 1953 and 1954 workshops, respectively. A folio, "Public Health and Dental Programs in Industry," also came out of the 1953 workshop.

These volumes, printed in the hope that they "may assist other groups to conduct local workshops on industrial medico-dental programs," are available from the First District Dental Society of the State of New York, Hotel Statler, New York City. Free, but volume I is very limited in quantity.

Health Services for Children

A "Directory of Oklahoma Agencies Providing Health Services for Children," has been prepared by a joint committee of the Oklahoma Advisory Health Council and the Oklahoma School Administrators Association with the cooperation of the state university. It has been made available to other states contemplating a similar project. James Robinson, Executive Secretary, Oklahoma Advisory Health Council, North Campus, Norman, Okla.; 25 cents; discount for quantity orders.

For Better Family Life Education

"Education for Personal and Family Living: A Working Guide for Colleges" and "Strengthening Family Life Education in Our Schools" are outgrowths of two projects in education for personal and family living being carried out by the American Social Hygiene Associa-

tion with a grant from a foundation.

The first grew out of the Central Atlantic Regional Teacher Preparation Project for training elementary and secondary school teachers in education for personal and family living. The report presents the materials developed, not as the final methodology for the teacher-to-be, but rather as a starting point for college faculties that want to develop programs in this field.

The second is the report of the Midwest Project of In-Service Education of Teachers. The report is, in effect, a resource guide to education for personal and family living addressed particularly to school administrators for whom it "presents possible approaches to a subject that demands their attention and lends itself admirably to inservice education." It stresses that each school in each community requires its own tailor-made personal and family life education program.

American Social Hygiene Association, 1790 Broadway, New York 19, N. Y.; each volume $1.

Alaskan Midwifery Manual

The practice of home deliveries and prenatal and delivery care by midwives is more common in Alaska than in many parts of continental United States. Hence, two important companion publications of the Alaska Department of Health, "Manual for Alaska's Midwives" and "Midwifery Teaching Guide for Public Health Nurses." They were prepared by the Section of Nursing with the Maternal and Child Health Section cooperating in the former.

The midwife's manual is particularly valuable in that the instructions are in simple language accompanied by step-by-step drawings in great detail. The instructions also suggest the use of simple materials, such as newspapers for pads, empty tin cans, etc. There are even detailed instructions for a makeshift incubator for premature babies, out of ordinary materials that the midwife or mother can collect and have on hand. The manual is also intended for use with the teaching guide.

These two documents should be very valuable for any area where there is any substantial midwifery practice. Alaska Department of Health, Alaska Office Bldg., Juneau.

New Public Affairs Pamphlets

Public Affairs Pamphlets keep coming—more and more of them in the health field. In fact in a recent total listing of 93, health and science accounted for 37, family relations 32, social problems 19, and intergroup relations, five. Among those that have been developed since August, 1955, with special relevance to health problems are:

Polio and the Salk Vaccine—Roland H. Berg
What Makes a Volunteer—Melvin A. Glasser
What Good Nursing Means to You—Susie Berg Waldman
New Medicines for the Mind—Their Meaning and Promise—Gilbert Cant
Psychologists in Action—Elizabeth Ogg
How to Choose a Camp for Your Child—Ernest Osborne
Cerebral Palsy—Its Scope and Management—Marguerite Abbott

Each of these is authored by someone familiar with the field and in some cases with the cooperation of a national agency in the field, as for example, the assistance of the American Psychological Association in the preparation of "Psychologists in Action."

Each pamphlet is 25 cents, with reductions for quantity orders. Public Affairs Pamphlets, 22 East 38th St., New York City.

Worth Acquiring

The Mental Health Film Board has made available a revised edition of its

illustrated brochure with a complete listing of the 12 films produced under its supervision. The Film Board, made up of a group of psychiatrists and public health specialists, was set up as a nonprofit educational foundation with the joint cooperation of the National Association for Mental Health and National Institute for Mental Health. Its purpose is to produce an authentic and coordinated series of educational films for use by lay and professional groups in public education programs and in professional training.

The films may be rented or borrowed from mental health societies, libraries, and educational 16 mm libraries. The list may be obtained from Mental Health Film Board, 166 E. 38th St., New York 16, N. Y.

"A Psychiatric Approach to Institutional Work with the Aged" includes the minutes of a 10-session psychiatric seminar conducted for the staff of the study projects in services for the aging of the Community Service Society by Dr. Alvin I. Goldfarb. It deals with the numerous aspects of the care of the aging, including institutional care, emotional, psychiatric, and nutritional problems, rehabilitation, community understanding, and others.

In an introduction the project director, Margaret Blenkner, says, "This was neither a didactic nor a formal teaching seminar. . . . It was intended to be a discussion in which the interests and problems of the group could be brought up and in which anxieties about troublesome clients could be ventilated and shared. . . . The psychiatric viewpoint offered herein is tentatively proposed . . . with the hope that it will be tested and will help to stimulate observation leading to further understanding of the psycho-dynamics of the older individual."

Available from National Committee on Aging, National Social Welfare Assembly, 345 E. 46th St., New York 17, N. Y.; 60 cents.

"Health Education Materials" is the 1955 Catalog of the National Dairy Council. Listed are 150 items as "tools for teaching children and adults how to improve their health habits." There are brief descriptions of each item, small marginal photographs of many, prices, sizes, etc. Folders, booklets, posters, charts, and visual aids make up the list. The catalog is free. 111 North Canal St., Chicago 6, Ill.

"The Best of Health to You," nutrition information for adults; "Forget Birthdays—Enjoy Good Eating," nutrition for the senior citizen; and "More, Please," normal nutrition and dental health for children are three new leaflets available from the American Dietetic Association. Simply written and illustrated with practical suggestions for meals, they are useful inexpensive nutrition education materials. The first is 10 cents, the two others 3 cents each. Reductions for quantity orders. The association also has available in 14 mimeographed pages a "Selected List of References on National Food Patterns and Recipes," 50 cents. 620 N. Michigan Ave., Chicago 11, Ill.

The 1956 edition of the "Directory of Member Organizations" has just been published by the National Health Council. It tells in brief the salient facts about the 50 members of the council, 39 of them voluntary organizations whose primary concern is health. The membership of the council has nearly doubled since the reorganization in 1947. This directory serves as a guide to the many-sided services and leadership provided by this group working together for common aims in the council. National Health Council, 1790 Broadway, New York 19, N. Y.; 75 cents.

Annual Reports

"To Westchester's Good Health" is a "silver anniversary report on one county department's war against disease and disability." The 25th anniversary of this County Health Department in New York coincides with the retirement of its health officer, William A. Holla, M.D., who was the third person to join the staff when the county department was organized in 1930 and was its health officer for 15 years.

When the department was organized there were 43 local boards of health in the county; 22 joined in the department immediately; 11 followed within three years; today only the three largest cities maintain their own departments. The department now serves a metropolitan suburban population of nearly 350,000.

The 25-year report, "prepared and printed at private expense," is a handsome document in multicolor, good paper, and printing, and vivid illustrations, photographic, graphic, and hand drawn. The marginal drawings of the various communicable diseases are both humorous and illuminating. It's an inspiring report to see, even though there are few "angels" to duplicate its like elsewhere.

Westchester County Health Department, White Plains, N. Y.

The "Seventh Annual Report of the Ohio River Valley Water Sanitation Commission" shows what can be done if the will and facilities are available to clean up stream pollution. The eight state members of the commission can now boast a total of 636 municipalities with sewer treatment works, three-fourths of which are considered adequate. Twenty of the works, representing a population greater than 130,000, were added in 1955. Industrial wastes from 508 of the 1,424 plants discharging effluents directly into the streams have facilities considered adequate. Earl Devendorf, director, Bureau of Environmental Sanitation, New York State Department of Health, is chairman of the commission, and Edward J. Cleary its executive director and chief engineer. Copies of the report from Mr. Cleary, 414 Walnut St., Cincinnati 2, Ohio.

"Frontiers" is the 1954–1955 Annual Report of the Association for the Aid of Crippled Children—a report imaginatively written and a model of good production. The "frontiers" of the title refers to the developing new public understanding of the handicapped child, new concept of treatment, new kind of formal education and home training, community organization for handicapped, and increasingly fruitful research into causes, prevention, cure, and when necessary, acceptance of handicaps.

At the end of 1955 Alice FitzGerald, for 15 years AACC's executive director and five years, associate director, retired, but remains as a part-time consultant.

Leonard W. Mayo, is the executive director, 345 E. 46th St., New York 17.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Services for Children with Cerebral Palsy—Committee on Child Health of the American Public Health Association. New York: APHA (1790 Broadway), 1955. 108 pp. Price, $1.50.

This volume is very accurately subtitled "A Guide for Public Health Personnel" and is admirably adapted to serve that purpose. It is designed as a supplement to the basic guide, "Services for Handicapped Children," and is part of a series prepared by the Committee on Child Health of the American Public Health Association under the chairmanship of Dr. Samuel Wishik.

Prepared jointly by the committee and the American Academy for Cerebral Palsy, this guide may be properly accepted as an authoritative reference which embodies the current trends in the professional and community approach to the problem of cerebral palsy.

Meticulous attention has been paid to organization in immediately usable form of a surprising amount of information especially considering the handbook size. The task of the authors must have been extraordinarily difficult because the whole field of neurological disability, which includes cerebral palsy, is at present in a very dynamic state, and concepts of care and management are constantly changing as new knowledge and experience become available. In spite of this, most of the material in this guide is of such basic nature that it will not soon be out of date.

This, and the companion guides, comprise basic tools not only for the active public health administrator but for the teacher and student of public health as well.

GLIDDEN L. BROOKS

Cancer and Common Sense—By George Crile, Jr. New York: Viking Press (18 East 48th St.), 1955. 118 pp. Price, $2.75.

The message of this thought-provoking book is addressed to all intelligent readers. The author, a prominent surgeon, makes an urgent plea for as conservative a treatment of each cancer patient as may be permissive in the light of current medical knowledge. There is much emphasis on the need for constant soul-searching by all who treat cancer and by those who teach the public concerning the dangers of this group of varied and variable malignant diseases. The author does not subscribe to the theories that a degree of cancerophobia may be justifiable on the grounds of motivating more people to seek early care, nor that wholesale radical surgery should be practiced on the current scale just because its intent is to save more lives.

The text is written in clear language; it is easy to follow and it holds the reader's attention; the technical content is controversial and is conducive to strong disagreement, particularly on the part of surgeons and those who favor immediate "professional perfectionism" regardless of the costs of medical care and the relative paucity of the actual results which are achieved.

This sobering book raises many questions and should be read particularly by physicians who are called upon to minister to cancer patients. One cannot help entertaining mixed emotions on reading each of the 13 chapters. The average layman, who may have a more limited perspective on cancer, is apt to come away bewildered and perhaps

shaken in his faith in the kind of "knowledge" which the cancer agencies have stressed in their educational campaign. LEONID S. SNEGIREFF

Introduction to Demography—By Mortimer Spiegelman. Chicago, Ill.: Society of Actuaries (208 South LaSalle Street), 1955. 309 pp. Price, $6.00.

The Society of Actuaries has chosen the author for this volume with commendable discernment. A valuable service has been rendered to public health interests as well as to members and prospective members of the society. Textbooks in the field of vital statistics are not numerous; indeed, teachers in this country have until now been embarrassed by lack of suitable textbook exposition covering the basic material of descriptive demographic practices within this country.

The language of this book is simple and direct. Although the exposition is aimed to an audience of mathematical background, it gives major attention to the facts that are all too frequently by-passed in mathematical discussions. The reader is warned adequately concerning the deficiencies of the data as they arise in our recording processes in vital statistics. The symbolism of succinct mathematical expression does not, in general, interfere with smooth reading of the text.

The interests of actuaries in demography are not identical in their emphases with those of workers following traditional paths in public health. But the parallelism indicated by the coverage of this book is much closer than might be anticipated. Students of public health will perhaps consider that more attention is given to errors in the basic records than is warranted. This reviewer would not commend that view; he would ask rather for more discussion of errors in assignment of death to causes than Spiegelman ventured into, but discretion here was probably the better part of valor. Attention given to the life-table may seem more than would be appropriate to an introduction to vital statistics for those generally unfamiliar with quantitative processes, but again, orientation to life-tables is needful for public health workers as well as incipient actuaries.

It is good to have full chapters on Morbidity, the Working Population, and Population Estimates and Projections. There is plenty of interest in reading less familiar pages on Family Formation, Composition, and Dissolution, together with Fertility and Reproduction; these are the more vital parts certainly of the coverage implied by the title, Vital Statistics. A good set of titles for suggested reading to accompany each chapter, running to 35 pages, closes the text proper.

This book is indeed a remarkable condensation of an immense amount of information and is well organized.

ALAN E. TRELOAR

The Practical Nurse and Her Patient—By Fern A. Goulding and Hilda M. Torrop. Philadelphia, Pa.: Lippincott (E. Washington Square), 1955. 320 pp. Price, $4.25.

The authors address their book to the practical nurse reader and have, on the whole, limited their text to those factors in nursing care which relate more specifically to the emotional needs, comfort, and safety of the patient. They note that the step-by-step instruction in nursing technics can already be found in many good textbooks—as testified by the generous list of references at each chapter's end. Their stated aim is to give the practical nurse a "philosophy" of good nursing plus some helpful information to supplement her nursing skills.

Logically they start with the practical nurse as a person and her relationship with others. There are seven sec-

tions: the first three cover the more generalized care of the sick; the remaining sections include specific nursing treatments and procedures. Emphasis throughout is on the need for the practical nurse to be aware of, to try to understand, to appreciate some of the reasons for the patient's reaction to his particular condition—and to give care accordingly. Included are suggested methods the practical nurse can use to help the young child welcome the new baby; how she can win the sick child's (or adult's) cooperation with treatment, taking foods, and medicines. Like a refrain, the authors use every opportunity to illustrate the importance of sharing with the patient a simple, adequate explanation of the treatments and care he is receiving. The chapters on Those Who Are Growing Old and Caring for the Long-Time Sick should give added insight to nurses serving these patients. The last chapter, Using Community Health Resources, includes a list of national organizations with suggestions for their use by the practical nurse.

The volume is simply written and contains many practical ideas (well illustrated) for the care of the sick at home. On the whole the book should inspire and help the student and practical nurse give better care to her patient and might also serve as a useful reference for inservice programs in public health nursing organizations employing practical nurses.

HENRIETTA LANDAU

Particle Size Determination—By R. D. Cadle. New York: Interscience Publishers (250 Fifth Ave.), 1955. 303 pp. Price, $5.50.

Infection became particulate when germs supplanted miasms. The sanitarian determines the "coefficient of fineness" of turbidity removed by filter sand of determined "effective size." The hygienist determines significant dimensions of dusts, smokes, fumes, mists, and droplet nuclei. This review of "Particle Size Determination" is prompted by conclusions of studies on Flügge droplets, infective droplet nuclei, and germ-laden dust, that the infectivity of inhaled particles depends as much on their aerodynamic dimension as upon the virulence of included parasites or the resistance of the host.

The varied and important properties of finely divided matter have excited much interest in methods of particle size determination. This book reviews principles and devices used in measuring physical dimensions of particles, conveniently cataloged under the following chapter headings: Sampling Methods, Optical Microscopy, Electron Microscopy, Sieve Analysis, Sedimentation and Elutriation, Surface Area Measurements, Optical Methods, and Miscellaneous Methods.

The absence of familiar stand-bys from over 200 references to newer elaborations bewilders a hygienist. The simple measurement of settling velocity (area/volume count), for instance, or of vibrations of charged air-borne particles in an alternating electromagnetic field as important aerodynamic dimensions, is ignored.

While most of these studies express "size" in absolute physical terms (ultimately linear), the book is nevertheless of interest to the public health worker who can translate physical dimensions into hygienic dimensions, but significant hygienic dimensions must first be recognized. WILLIAM F. WELLS

Understanding People in Distress—By Barney Katz and Louis P. Thorpe. New York: Ronald Press (15 East 26th Street), 1955. 351 pp. Price, $4.00.

This book, written by two psychiatrists, is an excellent compilation of material on mental health and disease, written for lay readers. It gives a clear explanation of causes in conflict and

frustration, discusses the more common symptoms, and describes the methods of treatment more commonly used. It aims to lessen the mystery and fears surrounding mental problems through an understanding of their causes and treatment.

The first chapter of the book lays the foundation for the writer's thesis that all persons are, at one time or another, in distress and that it is the way the individual reacts to distress which determines the effect. Both outer and inner sources of distress are discussed, as well as the need for the individual himself to understand the forces contributing to his problem. Popular misconceptions in relation to the idea that inheritance is the major cause of emotional problems are explained and emphasis is placed on the basic human needs which all individuals have for the fulfillment of their organic and ego needs, the need for a sense of security and of personal worth, and for a search for happiness. Excellent material is given as to what happens to the individual when his needs are thwarted.

A thoroughly adjusted individual is defined as "one who satisfies his ego needs while meeting his social responsibilities." Causes of maladjustment and both desirable and undesirable mechanisms are discussed clearly and well. Some of the more prevalent signs of distress, such as seen in parent-child relations, faulty parental personalities, faulty marriages, stress in the school and adolescent years, trouble on the job, and problems in courtship and marriage, are all seen as signs of stress.

The authors then proceed to present some of the more serious problems in sexual behavior, psychosomatic disturbances, neuroses, alcohol and drug addiction, and the major psychoses. The book ends with an encouraging chapter on Hope for People in Distress and points to development of modern psychiatric treatment and the emphasis on mental health. An excellent bibliography is appended.

This is a practical, nontechnical book full of interesting, concise material about a wide range of emotional problems. It will be valuable for teachers, ministers, public health workers, and especially helpful for individuals who need a common sense, hopeful interpretation of people in distress.

ELIZABETH P. RICE

A Study of Multiple Screening—Descriptive Data on 33 Screening Surveys (rev. ed.)—Council on Medical Service, American Medical Association. Chicago, Ill.: AMA (535 N. Dearborn St.), 1955. 91 pp.

The Council on Medical Service and the Committee on Medical and Related Facilities of the American Medical Association have jointly assembled this report. It includes descriptions of 33 multiple-screening surveys done in 14 states and the District of Columbia. The description of each survey is followed by comments obtained from correspondence with those concerned with the project.

Although no effort has been made to evaluate these programs at this time, the introduction contains a summary of the advantages and disadvantages of multiple screening as an aid to diagnosis.

EDWARD PRESS

Prevention of Disease in Everyday Practice—By Isador Givner and Maurice Bruger. St. Louis, Mo.: Mosby (3207 Washington Blvd.), 1955. 964 pp. Price, $20.00.

An admirable attempt has been made by the editors to gather together in a single volume the preventive aspects of disease from the point of view of everyday practice. The concepts of prevention have been extended to include the prevention of complications of illness, early detection and treatment, as well as restorative and rehabilitative procedures

from the point of view of 47 contributors representing various fields of specialized practice. The collected material is an impressive reflection of an increasing interest in health maintenance and disease prevention. That such an approach has been made is both gratifying and encouraging.

The title is somewhat misleading and suggests that the focus is primarily on general practice. It was the intention of the editors, however, to deal with disease prevention from the point of view of the everyday practice of specialists. This has been accomplished in an effective manner. The scope of the book is encyclopedic and includes a good deal of information on specific treatment as well as prevention. The text is clear and concise.

The specialized approach detracts somewhat from the general value. The length of an arterial segment may be of importance in the prevention of complications from cardiac surgery. The number of physicians who will have an opportunity to benefit from such specialized advice, however, is necessarily limited. Despite criticism of this order, the book contains an extensive amount of information which is of practical everyday use.

HENRY J. BAKST

Churches and Social Welfare

Vol. I—The Activating Concern—Historical and Theological Bases—Edited by E. Theodore Bachmann. 120 pp. Price, $3.75.

Vol. II—The Changing Scene—Current Trends and Issues—By Horace R. Cayton and Setsuko Matsunaga Nishi. 214 pp. Price, $3.75.

New York: National Council of Churches of Christ in the U.S.A. (120 East 23rd St.), 1955.

At first thought it seems out of place to review books of this character in a journal devoted especially to public health. Upon careful perusal, however, it becomes evident that the Christian churches today are facing problems with which social welfare and public health are deeply concerned. It is pointed out that churches have been confronted with divorce, alcoholism, housing, segregation, labor relations, overseas relief, etc. In recent years social welfare and public health have also been faced with these problems and forced to enter the fields of mental health, alcoholism, chronic diseases, old age, and physical rehabilitation. This review may appropriately consider these two volumes together, as the purpose of the studies is well set forth in Appendix A of Volume II, "to provide information regarding the extent and nature of involvement of Protestant, Anglican, and Eastern Orthodox religious interests in the various types of health and welfare agencies and institutions in the United States as part of the basis for discussion at a National Conference on the Churches and Social Welfare . . . held in Cleveland, Ohio, in November 1955."

Volume I reveals considerable careful research into the historical and theological backgrounds concerning the health and welfare programs of 13 Protestant denominations having some form of welfare or public health work. A brief, clear-cut and lucid description of the services of each denomination has been prepared by some responsible representative of each. An attempt is made to show how its activities supplement, or cooperate, with the services of welfare and health in various phases of social welfare, social service, or social education.

The editor of Volume I is a professor of church history and missions and director of graduate studies at the Pacific Lutheran Theological Seminary at Berkeley, Calif. He has performed a difficult task in a scholarly manner and made the material readily understood.

Volume II considers present conditions relating the churches to social welfare and health. It points out changes in the welfare field as related to present church responsibilities and activities. Its scope includes "only those agencies and institutions whose major function is health and welfare activities." It is stated in Appendix A that "all health and welfare agencies and institutions anywhere in the 48 states, Alaska, Hawaii, Puerto Rico, and the Virgin Islands, known to the offices of 30 member denominations of the National Council were included." A careful analysis of all the material gathered in this way has been brought together, analyzed and presented in the form of charts and statistical tables for ready reference. These volumes are well printed and substantially bound. They should prove helpful for reference not only for the clergy but also for students of social welfare and public health.

RICHARD ARTHUR BOLT

The Natural History of Tsetse Flies. An Account of the Biology of the Genus Glossina (Diptera)—By Patrick A. Buxton (London School of Hygiene and Tropical Medicine, Memoir No. 10). London: H. K. Lewis and Company, Ltd. (136 Gower St.), 1955. 816 pp. Price, £4., 4s. (about $12.00).

In addition to the cosmopolitan insect-borne tropical diseases, such as malaria, yellow fever, plague, and filariasis, tropical Africa has a tremendous health problem of its own in the prevalence of trypanosomes pathogenic to man and animals and usually transmitted by the bite of tsetse flies. As Buxton puts it, "it seems reasonable to attribute a considerable share of the lack of development of Africa to infection of man or animals by these insects." The colonial governments, fully aware of the hygienic and economic importance of the tsetses, have for the past half-century sponsored intensive research on these flies, the diseases they transmit, and their control. Indeed, there are few other arthropods of sanitary importance so thoroughly studied as the twenty-one living species of Glossina.

In the first half of his book Buxton marshals the evidence thus gathered in a masterly natural history, or ecology, correlating the structure, physiology, and behavior of the tsetses with the climate, vegetation, and fauna of the environment. No doubt this section will appeal primarily to the general biologist, but it lays also the groundwork for the remaining chapters which review the possibilities of controlling the flies, as well as their relations to trypanosomal diseases. Of paramount importance to African sanitarians, these chapters offer also much to interest public health workers in other tropical and subtropical areas and wherever insects are a menace to the welfare of man and beast. The reviewer ventures to recommend particularly the sobering account of the attempted control by insecticides.

J. BEQUAERT

A Primer of Social Statistics—By Sanford M. Dornbusch and Calvin F. Schmid. New York: McGraw-Hill (330 West 42nd St.), 1955. 251 pp. Price, $4.75.

Written simply and clearly, this book is intended for social scientists or anyone else interested in learning elementary statistics. This primer is intended to enable students and others who have to concern themselves with statistics to make themselves statistically literate. It makes no pretense of surveying the entire field of statistics, nor does it present an exhaustive explanation of the topics it does cover. Emphasis is placed on the nature of statistical reasoning, including appropriate explanations of the logic underlying various statistical concepts and technics. Beginning with

tabular and graphic presentation, the authors go on to measures of central value and variability, dealing eventually with binomial and normal distributions and ending with prediction and regression, linear correlation, and contingency. The presentation is well organized for the beginner, and public health students and workers will find this a useful book to consult. GEORGE ROSEN

Infant Nutrition in the Subtropics and Tropics. World Health Organization Monograph Series, No. 29—By D. B. Jelliffe. New York: Columbia University Press (2960 Broadway), 1955. 237 pp. Price, $5.00.

Public health workers in tropical or underdeveloped countries will find the information on infant feeding practices in such areas brought together in this monograph to be of value in planning programs to improve maternal and child care. The discussion of present procedures is particularly detailed for the countries visited by the author in a 1953 WHO survey in the Middle and Far East and Africa, and very incomplete for Latin America in which he has not traveled. His brief comments on nutritional anemia, avitaminosis A, rickets, beri-beri, etc., are accurate and the description of kwashiorkor, with accompanying photographs, is one of the best available to date. He discusses bacterial and parasitic infections as major factors contributing to morbidity and mortality from nutritional deficiencies in young children in the tropics and subtropics. A chapter devoted to practical measures of preventing malnutrition emphasizes the use of local food resources and the necessity of adapting programs to the culture and traditions of the people concerned.

The section on Nutrition Education in Maternal and Child Health Centers, written in collaboration with Dr. Anne Burgess, is excellent for health workers everywhere. A questionnaire for use in investigating methods of infant feeding appears as an appendix and the book contains over 300 references and an index. NEVIN S. SCRIMSHAW

Cancer Cells—By E. V. Cowdry. Philadelphia, Pa.: Saunders (West Washington Square), 1955. 677 pp. Price, $16.00.

An authoritative monograph from the pen of a leading scientist reflects the accumulating insight in cell behavior. The book is clearly written and the contents are arranged in a logical, sequential manner, beginning with definitions; the explanation of the distinction between benign and malignant tumors; malignant potentialities of normal cells; discussion of the properties of malignant cells, the agents which are known to cause malignant transformation and the theories evolved to explain these changes; discussion of the susceptibility of normal cells to carcinogens and their latency periods in the light of modifying factors, followed by the discussion of data which pertain to the prevention, diagnosis, and treatment of cancer; and the achievements and handicaps in cancer research. The author was assisted by Dr. Eugene Roberts in the writing of the chapter on chemical properties of cancer cells.

One hundred and thirty-seven figures and 50 tables accompany the text; these include seven color-plates which demonstrate special cytologic characteristics, augmented by 54 photomicrographs, eight chromatograms, and 10 electron micrographs. There are 63 pages of bibliographic references arranged in alphabetical order and an index of 30 pages.

Several unusual features in the text and the appendixes deserve special mention: the discussion of the historical aspects of international cooperation in cancer research; listing of members of the International Cancer Research Com-

mission and other research groups includes their addresses; existing cancer registries, cancer journals, reviews, and a selected short list of books, symposia, and conference reports devoted to cancer.

This valuable addition to the bibliography of biological science is recommended as reference text for teaching institutions where the problems of growth in animals and plants are considered, for cancer research institutes and laboratories, teaching hospitals, and the personal libraries of physicians specializing in cancer and allied diseases.

LEONID S. SNEGIREFF

How to Reduce Surely and Safely—By Herbert Pollack with Arthur D. Morse. New York: McGraw-Hill (330 West 42nd St.), 1955. 152 pp. Price, $2.95.

The 25 million overweight Americans for whom this book was written would do well to study the information presented and to follow its simplified, point-by-point instructions for attaining a desirable weight. Dr. Pollack has outlined a weight reduction program for men and women based on a realistic appraisal of calories versus activity. All the information needed to individualize a reduction regime is given: tables of desirable weights and of energy calories; menu patterns and sample menus ranging from 800 calories per day to 3,000; an indexed calorie counter; lists of substitute foods; and hints for low-calorie cooking.

Throughout the author has emphasized sound principles of good nutrition and the importance of combining moderate exercise with moderate dieting. In one of the best chapters, titled "Diet Fads and Fakes," Dr. Pollack exposes diet quacks and hawkers of health foods, and explodes the myths surrounding "wonder foods" and "wonder diets."

There are several statements regarding causes and mechanisms of obesity which might be considered dogmatic in view of the lack of supporting evidence.

This book is clearly and simply written. It should interest the overweight public. Practicing physicians and dietitians will find it useful as a reference for their patients.

GRACE K. FINNEGAN

Adolescent Development—By Elizabeth B. Hurlock (2nd ed.). New York: McGraw-Hill (330 West 42nd St.), 1955. 590 pp. Price, $6.00.

The revised edition of this volume again provides a good source book for material about this phase of growth, particularly from the viewpoint of the sociologist. The descriptions of group behavior and the complexities of group interrelationships are well defined.

From the viewpoint of medical psychology there is much that seems to be missing. Although the factual material on sex interests is well described, the pervasiveness of sex drives at this developmental stage seems to be quite lacking. The student will find it an excellent reference for factual descriptive material of the behavior of children, but will find it grossly lacking in the current interpretation of this behavior, and especially in the relationships of such behavior to other stages of the developmental process. Many of the references are old, and the few important new references, such as to Josselyn's booklet on adolescence and Erikson's "Childhood and Society" are not present.

HENRY H. WORK

Protein Malnutrition: Proceedings of a Conference in Jamaica (1953)—Sponsored jointly by the Food and Agriculture Organization of the United Nation, the World Health Organization and the Josiah Macy, Jr. Foundation. New York: Columbia University Press (2960 Broadway), 1956. 277 pp. Price, $3.50.

A very important group of nutri-

tabular and graphic presentation, the authors go on to measures of central value and variability, dealing eventually with binomial and normal distributions and ending with prediction and regression, linear correlation, and contingency. The presentation is well organized for the beginner, and public health students and workers will find this a useful book to consult. GEORGE ROSEN

Infant Nutrition in the Subtropics and Tropics. World Health Organization Monograph Series, No. 29—By D. B. Jelliffe. New York: Columbia University Press (2960 Broadway), 1955. 237 pp. Price, $5.00.

Public health workers in tropical or underdeveloped countries will find the information on infant feeding practices in such areas brought together in this monograph to be of value in planning programs to improve maternal and child care. The discussion of present procedures is particularly detailed for the countries visited by the author in a 1953 WHO survey in the Middle and Far East and Africa, and very incomplete for Latin America in which he has not traveled. His brief comments on nutritional anemia, avitaminosis A, rickets, beri-beri, etc., are accurate and the description of kwashiorkor, with accompanying photographs, is one of the best available to date. He discusses bacterial and parasitic infections as major factors contributing to morbidity and mortality from nutritional deficiencies in young children in the tropics and subtropics. A chapter devoted to practical measures of preventing malnutrition emphasizes the use of local food resources and the necessity of adapting programs to the culture and traditions of the people concerned.

The section on Nutrition Education in Maternal and Child Health Centers, written in collaboration with Dr. Anne Burgess, is excellent for health workers everywhere. A questionnaire for use in investigating methods of infant feeding appears as an appendix and the book contains over 300 references and an index. NEVIN S. SCRIMSHAW

Cancer Cells—By E. V. Cowdry. Philadelphia, Pa.: Saunders (West Washington Square), 1955. 677 pp. Price, $16.00.

An authoritative monograph from the pen of a leading scientist reflects the accumulating insight in cell behavior. The book is clearly written and the contents are arranged in a logical, sequential manner, beginning with definitions; the explanation of the distinction between benign and malignant tumors; malignant potentialities of normal cells; discussion of the properties of malignant cells, the agents which are known to cause malignant transformation and the theories evolved to explain these changes; discussion of the susceptibility of normal cells to carcinogens and their latency periods in the light of modifying factors, followed by the discussion of data which pertain to the prevention, diagnosis, and treatment of cancer; and the achievements and handicaps in cancer research. The author was assisted by Dr. Eugene Roberts in the writing of the chapter on chemical properties of cancer cells.

One hundred and thirty-seven figures and 50 tables accompany the text; these include seven color-plates which demonstrate special cytologic characteristics, augmented by 54 photomicrographs, eight chromatograms, and 10 electror micrographs. There are 63 pages of bibliographic references arranged in alphabetical order and an index of 30 pages.

Several unusual features in the text and the appendixes deserve special mention: the discussion of the historical aspects of international cooperation in cancer research; listing of members of the International Cancer Research Com-

mission and other research groups includes their addresses; existing cancer registries, cancer journals, reviews, and a selected short list of books, symposia, and conference reports devoted to cancer.

This valuable addition to the bibliography of biological science is recommended as reference text for teaching institutions where the problems of growth in animals and plants are considered, for cancer research institutes and laboratories, teaching hospitals, and the personal libraries of physicians specializing in cancer and allied diseases.

LEONID S. SNEGIREFF

How to Reduce Surely and Safely—By Herbert Pollack with Arthur D. Morse. New York: McGraw-Hill (330 West 42nd St.), 1955. 152 pp. Price, $2.95.

The 25 million overweight Americans for whom this book was written would do well to study the information presented and to follow its simplified, point-by-point instructions for attaining a desirable weight. Dr. Pollack has outlined a weight reduction program for men and women based on a realistic appraisal of calories versus activity. All the information needed to individualize a reduction regime is given: tables of desirable weights and of energy calories; menu patterns and sample menus ranging from 800 calories per day to 3,000; an indexed calorie counter; lists of substitute foods; and hints for low-calorie cooking.

Throughout the author has emphasized sound principles of good nutrition and the importance of combining moderate exercise with moderate dieting. In one of the best chapters, titled "Diet Fads and Fakes," Dr. Pollack exposes diet quacks and hawkers of health foods, and explodes the myths surrounding "wonder foods" and "wonder diets."

There are several statements regarding causes and mechanisms of obesity which might be considered dogmatic in view of the lack of supporting evidence.

This book is clearly and simply written. It should interest the overweight public. Practicing physicians and dietitians will find it useful as a reference for their patients.

GRACE K. FINNEGAN

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HENRY H. WORK

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A very important group of nutri-

tional deficiency syndromes in children which appear to be closely related to inadequate protein intake have increasingly attracted attention. Since 1949 the FAO and WHO have played an important role in this field by sponsoring a series of international meetings and related publications. The latter have included the results of surveys and general considerations of clinical conditions in various parts of the world. The proceedings of the 1953 conference stand in marked contrast to the previously published papers, since the Jamaica meetings were conducted along the lines of the well known Macy Foundation Conferences. Thus, we have a verbatim account of an intellectual "free-for-all" carried on by an impressive group of 26 participants from many parts of the world. The frank, stimulating and detailed discussions center around four main topics: biochemistry, pathology, clinical aspects and treatment, and, finally, epidemiology and prevention of "protein malnutrition." The term "protein malnutrition" was adopted by the group as a framework of causation on which could be placed the various clinical conditions which are generally believed but not conclusively proved to be the effects of this deficiency. A scientific conference of this type is often pitched at such a technical level of subject matter and terminology that only the initiated and specialized individual can easily follow the discussion, while the newcomer is discouraged early. In these proceedings there are fairly numerous occasions when this holds true, but the major portion of the book should be easily followed by the interested public health worker without special background.

It is quickly apparent that this field is in such a pioneering stage that one of the great needs served by this conference was the exchange of basic information to permit comparison, generalizations and differentiations among the various syndromes of malnutrition under consideration. Thus the reader is let in on the ground floor; the questions and discussion serve to orient him on these syndromes and the present state of our knowledge of them in a way that no summary or work written by a single author could do.

For those especially interested in the relation between nutrition and disease, this volume is a gold mine of information and research-provoking ideas. Most importantly, it points out the magnitude of one of the world's key problems—the ill-health of a large proportion of its children.

MAURICE E. SHILS

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ALCOHOLISM ITS PSYCHOLOGY AND CURE. Frederick B. Rea. New York: Philosophical Library, 1956. 143 pp. Price, $3.50.

ANNUAL SURVEY OF PSYCHOANALYSIS. VOL. III 1952. Edited by John Frosch, Nathaniel Ross, et al. New York: International Universities Press, 1956. 682 pp. Price, $10.00.

CEREBRAL PALSY. ADVANCES IN UNDERSTANDING AND CARE. Viola E. Cardwell. New York: Association for the Aid of Crippled Children, 1956. 625 pp. Price, $5.00.

CLINICAL LABORATORY DIAGNOSIS. Samuel A. Levinson and Robert P. MacFate (5th ed.). Philadelphia, Pa.: Lea and Febiger, 1956. 1246 pp. Price, $12.50.

CONTROL DE LA TUBERCULOSIS EN PUERTO

RICO. Fernando Padro. San Juan, Puerto Rico: Departamento de Salud, Division de Salud Publica, Negociado de Tuberculosis, 1956. 71 pp.

DIRECTORY, AMERICAN COUNCIL OF INDEPENDENT LABORATORIES, INC. Washington, D. C.: American Council of Independent Laboratories, Inc., 1956. 90 pp.

DOCTORS MAYO, THE. Helen Clapesattle. New York: Pocket Books, 1956. 484 pp. Price, $.50.

A DOWN EAST SCHOOL HEALTH PROGRAM. THE MAINE SCHOOL HEALTH DEMONSTRATION 1947–1953. REPORT AND EVALUATION. Augusta, Me.: State Department of Health and Welfare, Division of Maternal and Child Health, 1955. 36 pp.

A FAMILY BUDGET STANDARD. FOR THE USE OF SOCIAL AND HEALTH AGENCIES IN NEW YORK CITY. New York: Welfare and Health Council of New York City, 1955. 62 pp. Price, $1.00.

FOCUSED INTERVIEW, THE. Robert K. Merton; Marjorie Fiske; and Patricia L. Kendall. Glencoe, Ill.: Free Press, 1956. 186 pp. Price, $3.00.

GROUP DISCUSSION-DECISION. AN APPRAISAL OF ITS USE IN HEALTH EDUCATION. Betty Wells Bond. Minneapolis, Minn.: Minnesota Department of Health, 1956. 109 pp. Limited distribution.

GROUP DISCUSSION IN EDUCATIONAL SOCIAL AND WORKING LIFE. Edited by John Burton. London, England: Central Council for Health Education, 1956. 92 pp. Price, 3s 6d.

HOW TO LIVE WITHOUT LIQUOR (Signet Key Book). Ralph A. Habas. New York: New American Library, 1955. 124 pp. Price, $.25.

MEDICAL PARASITOLOGY. LABORATORY MANUAL. Glenn L. Hoffman. Minneapolis, Minn.: Burgess Publishing Co., 1956. 98 pp. Price, $2.75.

MIGRATION AND MENTAL DISEASE. Benjamin Malzberg and Everett S. Lee. New York: Social Science Research Council, 1956. 142 pp. Price, $1.50.

OLDER PEOPLE IN THE DETROIT AREA AND THE RETIREMENT AGE. A STUDY OF A CROSS-SECTION OF THE OVER-65 GROUP OF CITIZENS. Catherine Varchaver. Grand Rapids, Mich.: Eerdmans Publishing Co., 1956. 43 pp. Price, $1.00.

POLIOMYELITIS. PAPERS AND DISCUSSIONS PRESENTED AT THE THIRD INTERNATIONAL POLIOMYELITIS CONFERENCE. INTERNATIONAL POLIOMYELITIS CONGRESS. Philadelphia, Pa.: Lippincott, 1955. 567 pp. Limited distribution.

PRENATAL AND PARANATAL FACTORS IN THE DEVELOPMENT OF CHILDHOOD BEHAVIOR DISORDERS. Martha E. Rogers; Abraham M. Lilienfeld; and Benjamin Pasamanick. Baltimore, Md.: Johns Hopkins University School of Hygiene and Public Health, 1956. 157 pp.

PROCEEDINGS 1955 ANNUAL MEETING OF THE ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS. NOVEMBER 6–12, WASHINGTON, D. C. Cheyenne, Wyo.: Jean B. Hodson, State Office Building, 1956. 16 pp.

PSYCHOPHARMACOLOGY. Nathan S. Kline. Washington, D. C.: American Association for the Advancement of Science, 1956. 165 pp. Price, $3.50; $3.00 to AAAS members.

PUBLIC HEALTH LAWS OF TEXAS. Henry A. Holle. Austin, Tex.: State Department of Health, 1956. 302 pp.

STATE CONTROL OF MILK PRICES. James A. Tobey. Washington, D. C.: Milk Industry Foundation, 1955. 98 pp. Price, $6.00.

VITAL STATISTICS OF THE UNITED STATES 1953. VOL. I—INTRODUCTION AND SUMMARY TABLES, TABLES FOR ALASKA, HAWAII, PUERTO RICO, AND VIRGIN ISLANDS. MARRIAGE, DIVORCE, NATALITY, FETAL MORTALITY AND INFANT MORTALITY DATA. Prepared under the supervision of Halbert L. Dunn. Washington, D. C.: Gov. Ptg. Office, 1955. 354 pp. Price, $3.50.

WORDS AND THEIR WAYS. Eugene H. Sloane. Annapolis, Md.: Owl Press, 1955. 108 pp. Price, $1.00.

YELLOW FEVER VACCINATION. Smithburn, et al. World Health Organization Monograph Series No. 30. New York: Columbia University Press, 1956. 238 pp. Price, $5.00 cloth.

A Selected Public Health Bibliography with Annotations

"Over There" Also—"The one-day conference convened by the Central Health Council for Health Education to consider the role of the local authorities in promoting mental health through health education attracted an audience of some 400 persons to the Great Hall of B.M.A. House. . . ." A too brief account of the day-long discussion is commended to you, but just as a news item the quotation seems significant.

ANON. Health Education in Mental Health. M. Officer 95, 8:92 (Feb. 24), 1956.

Status Essential—To the question, why isn't industrial sanitation given adequate managerial attention?, this (Annual Meeting) speaker offers some answers dredged out of his long experience. Mostly it is because plant sanitation is disbursed among production and mechanical departments or haphazardly unattached to any, he says.

BARRON, J. L. Industrial Sanitation and the Worker's Health. Modern San. 8, 1:13 (Jan.), 1956.

From Merrie England—Two (Br.) lecturers tell what to do when smallpox rears its ugly head. Their advice may have a curious ring in American ears. A last suggestion is that the outbreak is not to be used as a focal point for encouraging general vaccination—that is to be frowned upon at any time. Above all, care must be taken not to spread a general alarm. Vaccination of contacts is permissible, but not too much is to be expected of it.

BREEN, G. E. Management of an Outbreak of Smallpox (and one related paper). Pub. Health 69, 5:98 (Feb.), 1956.

Sniffles—In a close follow-up of 45 Canadian families during two half-year periods it was found that children had colds oftener than adults and that secondary attack rates varied inversely with the age of the index and exposed children. The younger the children the livelier the spread. There are more findings than these two—which are familiar enough to most observant mothers.

BUCK, C. Acute Upper Respiratory Infections in Families. Am. J. Hyg. 63, 1:11 (Jan.), 1956.

Benefits Persist—A seven-year follow-up of a community-wide chest survey leads to the conclusion that—with adequate isolation and treatment facilities for active cases—these surveys may improve the status of the white population for several years. For Negroes case-finding surveys should be repeated at shorter intervals than for whites.

COMSTOCK, G. W. Tuberculosis Studies in Muscogee County, Georgia. Am. Rev. Tuberc. 73, 2:157 (Feb.), 1956.

Students First—From a service-centered experience in which education was somewhat of a by-product, the field instruction part of this university school of nursing was changed to an educational process in which the experience was focused on student need.

COULTER, P. P., and ERICKSON, H. A New Pattern for Field Instruction in Public Health Nursing. Nursing Outlook 4, 2:76 (Feb.), 1956.

Keynote Address—An able and experienced journalist predicts that the next couple of decades will see more

advances in the war on mental disease than happened in all the last century. He presents current activities all over the nation which lead him to his assumption. More readers than just those in the mental health field will be impressed with his evidence.

DEUTSCH, A. States Astir Against Mental Disease. Ment. Hyg. 40, 1:13 (Jan.), 1956.

Things You Might Be Doing—This encompassing description of the national heart program ends with a list of suitable activities that local health departments might undertake, "with little or no extra expenditure of time, money or energy." And they add up to quite a sizable service!

FERREE, J. W. Cardiovascular Diseases and Public Health. Pub. Health Rep. 71, 2:115 (Feb.), 1956.

True or False?—A fine panel discussion, "Nutrition and Oral Health—Facts and Fallacies," is unhesitatingly commended to you. Not all the fallacies are the wooly cerebrations of quacks and cultists, you will find out. A good many well intentioned health publicists and self-nominated educators will find themselves condemned to stand with head in the corner.

GRIFFITH, W. H. Nutritional Requirements and Faddist's Claims (and 3 related papers). J. Am. Dent. A. 52, 3:264 Mar.), 1956.

Findings That Stand Up—Strengths and weaknesses in the variety of studies now underway seeking to nail down causes of lung cancer are revealed in this exploration. The very size of the lung cancer problem, the great number of lives at stake, and the enormous economic implications of effective control measures all go to make this a matter of moment to each of us.

HAENSZEL, W. Epidemiologic Tests of Theories of Lung Cancer Etiology. Pub. Health Rep. 71, 2:163 (Feb.), 1956.

Classic Demonstration—An important symposium you will want in your files is, "Newburgh-Kingston Caries Fluorine Study: Final Report." It gives all the details that were summarized for you in, "The Conclusion of a Ten-Year Study of Water Fluoridation" in our March, 1956, Journal.

HILLEBOE, H. E. History of the Newburgh-Kingston Caries Fluoride Study (and 3 related Papers). J. Am. Dent. A. 52, 3:291 (Mar.), 1956.

Parent's Obligation—Among children under six almost two-thirds of the accidents occurred when the children were not guarded by their parents—upon whom accident prevention in this age group largely rests. Greater numbers of deaths were among children under one year (leading cause, suffocation), among the older ones, traffic accidents and falls predominated. (An APHA Annual Meeting paper.)

JACOBZINER, H., et al. Accident Fatality Follow-Up Study in Children Under Six. GP 13, 2:88 (Feb.), 1956.

Did You Know?—At least one billion dollars is spent each year on the care of mental patients in hospitals. Another five billion is lost in annual productivity of the patients. There are additional alarming statistics, but some encouraging information, too, here in the report.

BARTEMEIER, L. H., and APPEL, K. E. Joint Commission on Mental Illness and Health, Inc. J.A.M.A. 160, 5:392 (Feb.), 1956.

Histoplasmosis Note—Sheltered soil from abandoned chicken houses in areas of high-skin sensitivity proved to be the most prolific source of H. capsulatum in this wide-ranging laboratory study of soil samples.

LARSH, H. W., et al. Natural Reservoir of Histoplasma capsulatum. Am. J. Hyg. 63, 1:27 (Jan.), 1956.

Radiologists' Hazard—That increases in leukemia death rates are real and not due just to better diagnosis are indicated by the finding that rates are higher—at certain ages—in urban than in rural populations, but at other ages they are of the same order. There is a lot of significant information to be found here. (A Kansas City meeting paper.)

MEADORS, G. F. Epidemiology of Leukemia. Pub. Health Rep. 71, 2:103 (Feb.), 1956.

Absence and Fondness—An intriguing hypothesis is looked into here. Is the extent of a wife's participation in activities outside the family related (a) to her interest in and liking for her children, and (b) the effectiveness of her fertility planning? It seems a shame to spoil the plot by giving any of the findings of the inquiry here.

PRATT, L., and WHELPTON, P. K. Social and Psychological Factors Affecting Fertility. Milbank Mem. Fund Quart. 34, 1:45 (Jan.), 1956.

Not to Be Disregarded Lightly—Three-fourths of those who suicided had threatened to do so previously. There are a lot of significant findings from this study, but that one statistic should be sufficient to send you looking for this paper.

SCHNEIDMAN, E. S., and FARBEROW, N. L. Clues and Suicide. Pub. Health Rep. 71, 2:109 (Feb.), 1956.

Progress Report—This is, "the first controlled trial of the (BCG) vaccine in Great Britain and one of the few so far undertaken in any part of the world. The early results of the present study provide clear evidence . . . of the efficacy of BCG Vaccination. . . ."

Tuberculosis Vaccine Clinical Trials Committee. BCG and Vole Bacillus Vaccines in the Prevention of Tuberculosis in Adolescents. Brit. M. J. 4964:414 (Feb. 25), 1956.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publication in which they appeared; the addresses are furnished for you convenience.

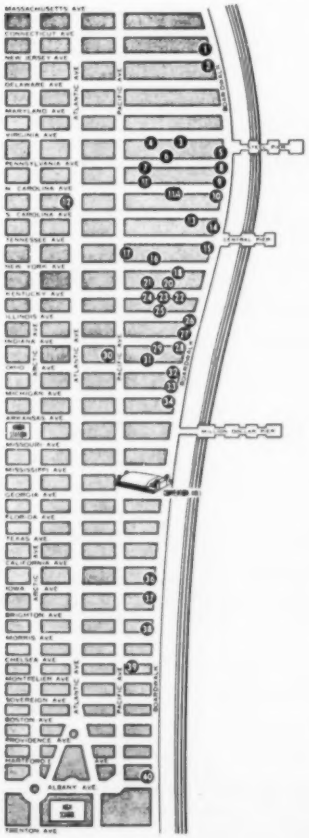
Am. J. Hyg. (American Journal of Hygiene), 615 N. Wolfe St., Baltimore 5, Md.
Am. Rev. Tuberc. (American Review of Tuberculosis), National Tuberculosis Association, 1790 Broadway, New York 19, N. Y.
Brit. M. J. (British Medical Association House), 19 Tavistock Square, London, W.C.1., England.
GP (General Practitioner), American Academy of General Practice, Broadway at 34th St., Kansas City 2, Mo.
J. Am. Dent. A. (Journal of the American Dental Association), 222 E. Superior St., Chicago, Ill.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.
M. Officer (Medical Officer), Whitefriars House, 72–78 Fleet St., London, E.C.4, England.
Ment. Hyg. (Mental Hygiene), National Association for Mental Health, 372–374 Broadway, Albany, N. Y.
Milbank Mem. Fund Quart. (The Milbank Memorial Fund Quarterly), 40 Wall St., New York, N. Y.
Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.
Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.
Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, Tavistock Sq., London, W.C.1, England.
Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Association News

EIGHTY-FOURTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ATLANTIC CITY, N. J., NOVEMBER 12–16, 1956

Street Plan of Atlantic City Showing Location of Convention Hall and Housing Bureau Hotels

ATLANTIC CITY



INDEX TO MAP

Map Number	Hotel
8	Abbey
37	Ambassador
1	Breakers
11A	Carolina Crest
38	Chelsea
28	Claridge
29	Crillon
33	Dennis
30	Eastbourne
16	Flanders
6	Holmhurst
22	Sterling
23	Jefferson
24	Kentucky
11	Lafayette
25	Madison
39	Mark
32	Marlborough-Blenheim
20	Monticello
3	Morton
14	New Belmont
12	Penn-Atlantic
40	President
36	Ritz-Carlton
31	Runnymede
5	Seaside
13	Senator
34	Shelburne

84th ANNUAL MEETING

HOW TO MAKE HOTEL RESERVATIONS FOR THE ATLANTIC CITY MEETING

A HOUSING BUREAU will be operated by the Atlantic City Convention Bureau for the 84th Annual Meeting of the APHA in Atlantic City, N. J., November 12–16. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible on the form page 527. (See map and index of hotels on page 525.)

Hotels and Rates *

Hotels	Rooms with Bath		Two Rooms—One Bath			Parlor, Bedroom, Bath Suite
	Single	Double	2-Persons	3-Persons	4-Persons	
Abbey †	$6.00– 8.00	$ 8.00–14.00				
Ambassador	6.00–18.00	8.00–20.00			$16.00–28.00	$20.00–45.00
Breakers	5.00–11.00	7.00–18.00		$10.00–19.00	12.00–25.00	
Carolina Crest †	5.00– 7.00	8.00–10.00				
Chelsea	6.00– 8.00	10.00–16.00		12.00	15.00–18.00	
Claridge	7.00–15.00	11.00–19.00				36.00
Crillon †		8.00–12.00				
Dennis	7.00–10.00	10.00–22.00		18.00	22.00–30.00	35.00–45.00
Eastbourne	6.00– 8.00	8.00–11.00	$12.00	14.00	16.00	
Flanders	6.00– 7.00	8.00–12.00	12.00–13.00	16.00–18.00	18.00–20.00	
Holmhurst	4.50	8.00			28.00–32.00	
Jefferson	6.00– 8.00	8.00–12.00	12.00–14.00	14.00–16.00	16.00–22.00	
Kentucky	3.00– 4.00	6.00– 7.00	8.00	10.00		
Lafayette	6.00– 8.00	8.00–12.00				20.00–24.00
Madison	6.00– 8.00	7.00–12.00		12.00–16.00	14.00–20.00	
Mark	5.00– 7.00	6.00–10.00			16.00	
Marlborough-Blenheim	6.00– 9.00	10.00–20.00	15.00–17.00	15.00–19.00	17.00–22.00	34.00–40.00
Monticello	4.00– 5.00	5.50– 7.00		9.00	11.00–12.00	
Morton	6.00– 8.00	9.00–12.00			16.00–18.00	
New Belmont	4.00– 5.00	6.00–10.00	8.00	12.00	14.00	
Penn-Atlantic	4.00– 5.00	7.00– 8.00		11.00–12.00	14.00–16.00	17.00
President	5.00–10.00	8.00–15.00				13.00–24.00
Ritz-Carlton	6.00–10.00	8.00–22.00			24.00	35.00
Runnymede †	5.00– 8.00	7.00–10.00	15.00	17.00–19.00	18.00–20.00	
Seaside	5.00– 9.00	8.00–14.00		17.00		28.00
Senator	6.00–10.00	8.00–16.00	12.00–16.00	14.00–20.00	16.00–24.00	28.00
Shelburne	7.00– 9.00	10.00–18.00		21.00–24.00		41.00–43.00
Sterling	5.00– 6.00	8.00–10.00		12.00	14.00–16.00	

* The above rates are subject to 3 per cent Municipal Tax.

† Rate includes breakfast.

Note: Some hotels may require a deposit.

News of Affiliated Societies

Oklahoma

The Oklahoma Public Health Association at its meeting in Stillwater on November 7–9, 1955, decided to change its meeting date. Thus, except for a brief session in connection with the Southern Branch meeting held in April, it will not meet in 1956. Its next annual gathering will be in January, 1957.

Officers elected last November are:

President—Glenn Earley, R.S.
Vice-President—Kirk T. Mosley, M.D., M.P.H., director of preventive medicine, Oklahoma University
Secretary-Treasurer—Marjorie Butler, clerical consultant, Division of Local Health Services, State Department of Health
Representative to APHA Governing Council—Margaret Shackelford, director, Division of Statistics, State Department of Health

Texas

The Texas Public Health Association held its 31st annual meeting at Fort Worth, February 26–29, with an attendance of about 700. The meeting was judiciously spiced with social gatherings—a Bar-B-Q, banquet and dance, and coffee hours. The banquet speaker was Ira V. Hiscock, Sc.D., President of the APHA, who dis-

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HOTEL RESERVATION FORM

PLEASE MAKE RESERVATIONS NOTED BELOW
(Please Print or Type)

First Choice..... Hotel Arrival ....., at ..... a.m. ..... p.m.

Second Choice..... Hotel Departure ....., at ..... a.m. ..... p.m.

Third Choice..... Hotel Two Rooms—One Bath for:

Single room @ $..... to $..... 2 Persons @ $..... to $.....

Double room @ $..... to $..... 3 Persons @ $..... to $.....

Suite @ $..... to $..... 4 Persons @ $..... to $.....

NAMES OF ALL OCCUPANTS: ADDRESSES:

....

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....

....

PLEASE CONFIRM TO: .....
(complete mailing address) .....
.....

MAIL THIS FORM TO: **Housing Bureau**
16 Central Pier
Atlantic City, N. J.

cussed the new frontiers of public health.

The nine sections each met for one or two days; there were two general assemblies and an afternoon of curbstone consultations devoted to the practical details of a public health program. M. L. McDonald's presidential address and Dr. Henry A. Holle's "Forward with Public Health in Texas" were given at the first assembly together with the presentation of certificates to past presidents. At the second assembly out-of-state speakers were featured—Appollonia F. Olson from the Public Health Service's Division of Nursing Resources; Kenneth F. Herrold, Ph.D., from Teachers College, Columbia University; and J. C. Tetrill, Jr., sanitary engineer from the Bureau of State Services, Public Health Service.

The newly established annual Bryant Award of a scroll and an all-expense trip to the next joint Annual Meeting of the APHA and the American School Health Association was presented to I. T. Barrett, M.D., director of school health services, Fort Worth.

President-elect, W. T. Ballard, district engineer of the State Health Department, succeeded M. J. McDonald as president, while the vice-president, J. N. Murphy, Jr., associate director of the state's Bureau of Laboratories, was named president-elect.

Other officers are:

Vice-Presidents—D. R. Reilly, director, San Angelo-Tom Green County Health Department; D. M. Cowgill, director, Cameron County Health Department

Executive Secretary—H. E. Drumwright, sanitary engineer, Dallas Health Department

Massachusetts Recruitment Committee

The Massachusetts Public Health Association has a Public Health Careers Committee which has organized a volunteer group of the various public health disciplines to serve as resource consultants to the Eastern College Personnel Officers Association. They assist in the counseling of students and, upon invitation, speak before college groups on job opportunities in the public health field. Job opportunities are printed from time to time in "This Week in Public Health" of the Massachusetts Department of Health.

Muriel Bliss Wilbur is chairman of the Public Health Careers Committee. Other members are drawn from the state health and education departments, the state tuberculosis and cancer societies, a local health department, college, hospital, and dispensary.

Ohio Starts a "Newsgram"

"OPHA Newsgram" is a new publication of the Ohio Public Health Association serving its members and friends. It is designed as an information medium to be issued "from time to time as news of public health interest arises." Health legislation in the state, OPHA activities, meetings and dates of a variety of related organizations, the shifting scene of people and project, and red-lettering forthcoming articles in state journals are outlined as "Newsgram's" fields of interest.

The president of OPHA, Sewall Milliken, reports "that a small number of copies will be available to other state public health associations and interested friends." John D. Porterfield, M.D., is chairman of the five-member editorial board; John Morrison is editor. 3590 Ontario, Columbus 11.

Michigan Association Appoints Executive Secretary

Oscar D. Stryker, M.D., president, Michigan Public Health Association, has announced the appointment of Maurice J. Mayer to the newly created post of executive secretary. Michigan thus becomes the first of the Affiliated Societies with an employed staff member.

Mr. Mayer has been actively engaged in the field of association management

since 1945. He attended Grand Rapids Junior College, Northwestern University, and the National Institute for Organization Management.

According to Dr. Stryker, Mr. Mayer's interest in public health dates back to 1942 when he was chairman of the Lansing Junior Chamber of Commerce Public Health Committee. He served in this capacity for two years and assisted in the creation and operation of the Lansing Blood Bank. Since then he has served in various capacities with the Optometric Association and on boards of directors of health agencies, including the Ingham County Chapter, National Foundation for Infantile Paralysis, and the board of directors of the state arthritis and rheumatism organization.

Mr. Mayer's address is 405 Hollister Building, Lansing.

Dr. Robert Breed's Passing

The death in Geneva, N. Y., on February 9 of Robert Stanley Breed, Ph.D., an internationally known authority on dairy bacteriology and professor emeritus of bacteriology at Cornell University and the New York State Agricultural Experiment Station, at the age of 78, recalls the significant part which Dr. Breed for nearly fifty years played in the field of dairy bacteriology, especially with reference to the volume now called "Standard Methods for the Examination of Dairy Products," an official document of the American Public Health Association, now in its 10th edition.

The record shows that Dr. Breed, who joined the APHA in 1909 and was a Charter Fellow of the Laboratory Section in 1922, occupied a variety of positions of leadership in the affairs of the Section and its Standard Methods Committees. He had given unstintingly of his time and effort not only for various publications of the APHA, but as editor-in-chief of Bergey's Manual of Determinative Bacteriology.

The American Public Health Association has many reasons for being grateful to Dr. Breed.

Preventive Medical Services Are Basic

Al Hays, president of the International Association of Machinists, Washington, D. C., representing almost 900,000 members, speaking of a pilot project for the machinist's union to be launched in St. Louis in cooperation with the St. Louis University Medical School said, "Basically what our new program of multiphasic screening examinations is aiming at is just what the entire labor movement and the country as a whole must appreciate and adopt—a switch in emphasis from insurance against the high costs of neglected health to prepayment for those medical care services which are basic to maintenance of good health."

APHA membership application blank on page XXIX

Employment Service

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication.

POSITIONS AVAILABLE

Health Officer—Stanislaus County (San Joaquin Valley); well organized, full program; 140,000 population. Salary: $877–$1,000; county retirement plan. Contact Mr. Ed Hane, County Administrator, Modesto, Calif.

Deputy Director of Health—to assist the director in the supervision and conduct of a municipal health program. Physician must have some graduate training in public health work, including the practice of medicine and surgery. Must be eligible to practice medicine in Connecticut. Salary range: $9,100–$10,764 per annum.

Medical Social Work Adviser—open to female resident citizens of the United States who possess the minimum qualifications. Salary range: $4,680–$5,512 per annum.

Medical Technologist I—open to resident citizens of the United States who possess the minimum qualifications. Salary range: $3,432–$3,900 per annum.

Write Personnel Director, Municipal Bldg., Hartford, Conn.

Chief, Division of Hospitals—Connecticut State Department of Health. Position involves supervision of licensure program for general hospitals, chronic and convalescent hospitals, and boarding homes for the aged, and state-level administration of the Federal Hospital Survey and Construction Act. Backed by adequate legislation, the program is educational in emphasis and is a key activity of a progressive health department. The staff includes a trained engineer and an experienced corps of inspectors. Requirements: eligibility for a Connecticut medical license and training and/or experience in hospital administration. Starting salary to $10,200, depending upon qualifications. Benefits include generous vacation and sick leave policies, insurance, and retirement programs. Write Glendon A. Scoboria, State Personnel Director, State Office Bldg., Hartford, Conn., or the Commissioner of Health, State Office Bldg., Hartford, Conn.

Medical Social Work Consultant—in Connecticut State cardiac program, to unify care of patients throughout state; contact with subsidized heart clinics in general hospitals, hospital social service departments, and general practitioners. Requirements: two years' graduate study in social work, with specialization in medical social work and two years of employment in medical social work. Starting salary: $4,020–$4,920, depending upon qualifications. Write Glendon A. Scoboria, State Personnel Director, State Office Bldg., Hartford, Conn., or the Commissioner of Health, State Office Bldg., Hartford, Conn.

Medical Director—Missouri State Crippled Children's Service. Must have two years of pediatric training and experience in public health or pediatrics. Salary: $800–$960. Write Merit System Supervisor, Bldg. T 13, University of Missouri, Columbia, Mo.

New Jersey State Department of Health—**Senior Public Health Physician**—to direct the crippled children program; salary range: $9,180–$11,280; M.P.H. or Pediatric Board eligible. Director, Division of Constructive Health, State Dept. of Health, Trenton, N. J.

New Jersey State Department of Health—**Public Health Physician**—to assist chief of maternal and child health program; salary range: $7,800–$9,300; training and experience in pediatrics required (in public health desirable). Position requires U. S. citizenship and residence establishment in New Jersey. Director, Division of Constructive Health, State Dept. of Health, Trenton, N. J.

Medical Director—Vermont Department of Health. To assume responsibility for planning, organizing, administering state-wide program in the areas of maternal and child health, crippled children's services, and possibly guidance clinics. Must have M.D. from an approved school and must have completed an approved internship. Two years of resi-

dency type training in pediatrics required. In addition, either three years of experience in public health at an administrative level or one year of graduate study in public health in an approved school and one year of experience in public health at an administrative level. Salary range: $7,904 to $9,178 annually with fringe benefits, including insurance plans, retirement, social security, and 12 paid holidays. Apply to Personnel Officer, Dept. of Health, 115 Colchester Ave., Burlington, Vt.

District Health Officer—Washington State. Attractive vacancy in well established full-time local health department at Vancouver, Wash. Salary range: $9,480–$11,328. Three years of experience and an M.P.H. required. Write: Dr. Bernard Bucove, Director of Health, 1412 Smith Tower, Seattle, Wash.

Senior Public Health Nurse—Generalized program, not including school nursing. Rural area. Salary range: $343–$411 in five steps. State registration required, eligible for certification in California. Eleven paid holidays, 15 working days vacation, sick leave, pension, car furnished. Write to Donald E. Upp, M.D., Health Officer, Kings County Health Dept., 1221 West Lacey Blvd., Hanford, Calif.

Industrial Hygiene Nursing Consultant—California Public Health Department at Berkeley. Salary range: $436–$530. Requires one year of industrial and three years' public health nursing experience; completion of college and approved curriculum in public health nursing; and four months' specialized study in industrial nursing. Must qualify for California R.N. license and public health nurse certificate. Send outline of education and experience to State Personnel Board, Dept. N-62, 801 Capitol Ave., Sacramento 14, Calif.

Chief, Bureau of Public Health Nursing—to plan, organize, and direct bureau in state department of health, and coordinate nursing activities of the department. Requires for appointment, but not for examination, valid license as registered nurse and certificate as public health nurse in California, plus five years' experience, including two years in administration. Salary range: $584–$710. Benefits include 40-hour week, three-week vacation, sick leave, and liberal retirement plan. For information write to California State Personnel Board, N-60, 801 Capitol Ave., Sacramento 14, Calif. Applications close June 26.

Public Health Nurse—Opening for public health nurse in well established health department located in new modern building. Many advantages plus very desirable Colorado climate. Beginning salary commensurate with ability and experience. Write to J. H. White, M.D., Director, Weld County Health Dept., P. O. Box 521, Greeley, Colo.

Public Health Nurses—for generalized program. Liberal personnel policies; 37½-hour week. Own car—eight cents per mile travel allowance. Beginning and intermediate positions are available. Beginning salary, depending on experience and qualifications, $3,600 and up, with automatic increases. Apply: Director, Northeast Colorado Health Dept., 700 Columbine St., Sterling, Colo.

School Nurse—Staff position elementary public schools for September. No classroom teaching. Basic salary 10 months, with baccalaureate degree in public health nursing $3,600. Salary adjustment for previous experience following certification. Write H. R. McPhail, Supt. of Schools, Administration Bldg., Freeport, Ill.

Public Health Nurses—Rural county in central Illinois. Generalized public health program. Staff of nine persons. Certified public health nurse starts at $350 per month; $50 car allowance, two and one-half cents per mile travel, good personnel policies with vacation, sick leave, and retirement benefits. Write Director, Montgomery County Health Dept., Hillsboro, Ill.

Public Health Nurse—A residential village of 14,000, 15 miles west of Chicago. Education qualifications: Illinois certification in public health nursing. B.S. preferred. Car necessary but allowance provided. Starting salary $350–$385 a month, depending on qualifications. Apply Robert A. Finley, Village Superintendent, Village Office, La Grange, Ill.

Public Health Nurse—State level consultant. Approved public health course and three years' experience, including supervisory work, required. Five-day, 37½-hour week, earned annual and sick leave, 12 paid holidays, travel expenses. Write Merit System Supervisor, Kentucky State Dept. of Health, 620 South Third, Louisville 2, Ky.

Detroit Department of Health Positions—Public health nursing program—**Junior Public Health Nurse** ($4,056–$4,138); **Public Health Nurse** ($4,138–$4,526); **Assistant and Senior Assistant Sanitary Engineers** ($5,367–$6,124 and $6,382–$7,228); **Junior and Associate Industrial Hygienists** ($4,683–$5,062 and $7,506–$8,349); **Dietitian and Head Dietitian** ($4,620–$5,190 and $5,545–$6,400); **Nutritionist** ($4,572–$4,952). For detailed information write: Detroit Civil Service Commission, 612 City-County Bldg., Detroit 26, Mich.

Public Health Nursing—Positions available in Health Department with the city of Flint, a rapidly growing city of 180,000 population. Beginning, intermediate, and administrative positions are available. Five-day, 40-hour week, with liberal retirement,

vacation, and sick leave policies. Car furnished. Beginning salary rates, $3,952, $4,329, or $4,654, depending on experience and qualifications. Automatic increases and longevity rates for length of service. Apply Flint Civil Service Commission, City Hall, Flint, Mich.

Sanitary Engineer—with bachelor's degree and three years' experience in health departments or substitute a year of graduate work for a year's experience for position on the state staff of the Arizona State Health Department. Starting salary $5,328. More highly qualified applicants may receive a higher starting salary. Write to Arizona Merit System Council, 429 State Office Bldg., Phoenix, Ariz.

Public Health Engineering—Positions open in Grade I, $355; Grade II, $400; Grade III, $430; Grade IV, $525. **Sanitarian**—Grade II, $280–$310; Grade III, $350–$410; Grade IV, $425–$500. Director of Personnel, Iowa State Dept. of Health, State Office Bldg., Des Moines, Iowa.

Air Pollution Engineer—$7,210–$8,410 for position in Wayne County (Mich.) Health Department located 17 miles from downtown Detroit. B.S. in chemical or mechanical engineering and preferably some experience in air pollution control work. Not over 50 years of age. Contact: Morton Hilbert, Wayne County Health Dept., Eloise, Mich.

Director, Bureau Industrial Hygiene—Starting salary $7,344, with increments to $9,168. Qualifications: graduate degree and five years' experience in industrial hygiene or B.S. degree in chemical, mechanical, or civil engineering and seven years' experience in industrial hygiene. Social Security, state retirement, liberal vacation and sick leave allowances. Merit system status. Write Director of Personnel, State Health Dept., Richmond 19, Va.

Sanitarian I—City and county positions. Several openings available in an expanding health control program. Require bachelor's degree in engineering, sanitary science, or biological sciences. Salary: $293–$366. Career Service Authority, Room 178, City-County Bldg., Denver, Colo.

Sanitarian I—to perform technical inspectional and investigational work in a generalized environmental health inspection program, such as dairies, food processing plants and stores, restaurants and barber shops. Requirements: college degree in sanitary science or one year of varied experience in environmental sanitation and a college degree in chemistry, bacteriology, or biological sciences.

Public Health Engineer I—to perform professional engineering work in a generalized program, including air pollution control, housing hygiene, vector control, milk and food sanitation. Requirements: college degree in sanitary, civil, mechanical, or chemical engineering.

Salary for both positions is $4,500 per year to start, with annual increases to $5,160. Contact Dept. of Public Health, Room 503, City Hall Annex, Philadelphia, Pa.

Sanitarians—Immediate opening, no examination required, for four sanitarians in generalized sanitation program. Applicants must have a valid Certificate of Registration issued by the State of California, or eligible to take state registration examination. Salary range: $335–$420 per month. Can start at step three ($375) or step four ($395), depending on qualifications and experience. Pending registration, it would be possible to employ as Junior Sanitarian person meeting requirements but not yet registered. Starting salary $335. Apply J. Don Layson, M.P.H., Director, Division of Environmental Sanitation, San Joaquin Local Health District, 130 S. American St., Stockton, Calif.

Health Education Consultant—For Anchorage Regional Office, Alaska Department of Health. Approved one-year course in public health with emphasis on health education, plus two years' full-time paid experience in health education or closely related field required. First-year salary $7,020, with annual increments. Liberal personnel policies, including six weeks' annual vacation. Write Alaska Dept. of Health, Alaska Office Bldg., Juneau, Alaska.

Health Educator—for established program in county health department in San Francisco Bay Area. Duties include community activities in health education in urban and rural areas and work with staff of 125 people. Salary: $414 per month to a maximum of $509 in three years. Requirements: master's degree in public health from an approved school of public health and not less than one year of recent employment. Apply to Dr. James C. Malcolm, Health Officer, Alameda County Health Dept., 15000 Foothill Blvd., San Leandro, Calif.

Health Education Consultant—Calhoun County Health Department, Mich. Person should have basic training in education and master's degree in public health. For particulars, direct inquiry to Dr. Hugh B. Robins, Director, City Hall, Battle Creek, Mich.

New Mexico Health Educator—($350–$525) M.P.H. in health education, plus one year of experience. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Public Health Analyst—Salary range: $341–$426 per month. Requires college graduation with major in public health statistics or with college graduation with major in statistics and a year of experience in public

health statistical work or five years of full-time paid experience in public health statistical work.

Medical Social Worker—Health department. Salary range: $322–$403 per month. Requires graduate work in medical social work or psychiatric social work and two years of experience. This position plans and executes medical social work program for the purpose of facilitating treatment of persons receiving medical care or supervision in the health department. Fresno County Civil Service Office, Room 101, Hall of Records, Fresno 21, Calif.

Public Health Dentist—in New York State Department of Public Health to assist Director of Bureau of Dental Health. Salary $9,280 to $11,110. Five years of experience or combination of postgraduate training and experience, plus eligibility for New York State dentistry license. Write Richard H. Mattox, Director, Office of Personnel Administration, New York State Dept. of Health, Albany 1, N. Y., before May 21, 1956.

International Vacancies

Malariologists, Public Health Administrators, Public Health Engineers, Public Health Nurses, Nurse Educators—There are several positions open in Latin America and the Caribbean for persons in the above categories. The essential qualifications are public health training and extensive field experience. Malariologists need considerable experience in malaria programs and use of the new residual insecticides. Nurses require advanced training in public health nursing or nursing education, as well as extensive experience in supervision, administration and/or teaching. Spanish is desirable in nearly all cases. Salaries and allowances range from $6,000 to $11,000 per annum. For further particulars write to the Personnel Officer, PASB/WHO, 1501 New Hampshire Ave., Washington 6, D. C.

Water Supply Engineer—ICA Mission, Manila, Philippines. B.S. degree, plus minimum 10 years' experience in design and construction of municipal water supplies. Duties: assist and advise Ministry of Health in community water supply program.

Sanitary Engineer—ICA Mission, Fortaleza, Brazil. B.S. degree, plus general sanitary engineering experience, including water supply development and design. Duties: advise and assist in State of Ceara sanitary engineering program, including training program.

Nurse Adviser (Tuberculosis)—ICA Mission, Panama. B.S. degree in nursing education or administration. Minimum five years' experience in supervision and teaching in tuberculosis nursing. Duties: consultation in tuberculosis nursing and tuberculosis control to hospitals, clinics, and community organization.

Public Health Nurse—ICA Mission, Helmand Valley, Afghanistan. B.S. degree and training in public health nursing, plus minimum five years' experience in administration, supervision, and teaching. Duties: train auxiliary health workers; demonstrate public health nursing in clinics.

Physician (Cardiorespiratory Physiologist)—ICA Mission, India. M.D. degree, plus appropriate experience. Duties: develop cardiorespiratory physiological department in research clinic.

Research Adviser (Endocrinology)—ICA Mission, India. M.D. or Ph.D. degrees, plus minimum five years' experience in research or teaching. Duties: set up research program in relation of pituitary hormones to skin pigmentation, train research personnel.

All require two-year tour of duty minimum. Attractive salary and adequate living allowances. Public Health Service, Division of International Health, Washington 25, D. C.

POSITIONS WANTED

Health Educator—M.P.H., University of Michigan, School of Public Health, 1951. Ed.D., Columbia University, 1954. Navy veteran. Two years in generalized community health education programs, community organization for x-ray, cancer, and child health programs. Extensive experience with school and community health councils. Desires employment in East. Write **Box HE-74,** Employment Service, APHA.

Bacteriologist—Ph.D., 40. Two years' industrial experience (pharmaceutical), two years public health laboratory, five years in charge of clinical laboratory, 10 years teaching undergraduate and graduate level, research. Publications. Desires change, academic, industrial, public or private agency. Write **Box L-49,** Employment Service, APHA.

Health Officer or Other Administrative Position—in public health; state, county, city level, or voluntary agency. Woman M.D.; M.P.H. expected June, 1956, from Columbia University School of Public Health and Administrative Medicine. Write **Box PH-63,** Employment Service, APHA.

Director or Other Administrative Position—Academic, industrial, public, or private agency. Widely experienced in public and industrial health, including consultation and advisory service on government level; environmental health problems: food, housing, communicable diseases, and all phases of environmental sanitation. M.P.H. Age 36. Write **Box C-30,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Public health physician to serve as epidemiologist on preventive medicine staff; foreign operations, one of leading industrial companies; $14,000 plus family maintenance. (b) Director, health department; Mariana Islands. (c) Assistant director, county health department; California. (d) Director, student health department; 3,000 students; opportunity affiliation state health department; West. (e) PH nurse consultant; correlate state board of health services with other public, private agencies; $5,000–$6,300; West. (f) Director, VNA, organize new program; cooperative board; leading Southwestern city. (g) PH instructor; university college; teach student and graduate nurses in generalized program; Midwest. (h) Executive secretary, health section, community welfare planning council; young man, M.P.H., experienced in community organization in health setting; East. (i) Health educator to serve as executive secretary, health council composed of 55 community and welfare organizations; interesting city outside the United States; although tropical country, delightfully equitable climate. (j) Industrial hygiene engineer and industrial hygiene chemist; will be responsible for directing air pollution program, working directly in industrial hygiene; California. (k) Health inspector experienced meat and dairy products inspection; foreign; $700 (l) Health educator; county health agency; $5,400–$6,000; university city; Pacific Coast. (m) Instructor in health and safety; new position to commence fall, 1956; state university; Midwest. (n) Sanitarian; county health department; Indiana.

OPPORTUNITIES WANTED

(a) Public health physician; M.P.H., Hopkins; five years, director, city health department; three years, professor, preventive medicine. (b) Public health administrator, B.S., Ed., M.A., supervision in public health nursing; Columbia University; 10 years' experience as public health supervisor; three years as consultant, foreign operation. (c) Health educator; M.S., D.P.H.; five years, teaching; eight years, director, health education, state health department. (d) Public health bacteriologist; M.S. (bacteriology); seven years, bacteriologist, metropolitan health department. (e) M.P.H.; since 1949, supervisor of sanitation and director of environmental sanitation training, state health department.

News from the Field

WHO News

A First MCH Training Center

The first training center for maternal and child health workers in Southeast Asia was inaugurated in Calcutta on December 30, 1955, by India's minister of health, Raj Kumari Amrit Kaur. The center is a joint project of the Indian government, WHO, and UNICEF. At the outset 24 each of physicians and nurses were enrolled for postgraduate training, three of whom were non-Indian students. The number of the latter is expected to increase with UNICEF fellowship aid. UNICEF has established 34 fellowships for Indians and 20 for other Asian countries. It is expected that eventually 250 non-Indian students will receive free training in the center.

The training center is administered as a part of the Maternal and Child Health Department of the All-India Institute of Hygiene and offers postgraduate courses to doctors, nurses, midwives, and other public health personnel. An urban clinic in Chetlah and a rural station in Singur are used for field training in the kind of environment that the students will face at work.

A number of the staff of the center have been trained in public health schools of the United States. WHO has recruited eight advisers for the center, whose salaries are paid by UNICEF. The adviser in health education is Morey R. Fields, Ed. D., on leave from his position as director of the Bureau of Health Education, New York City Department of Health.

Polio Vaccination World Review

The report of the group of medical scientists that met in Stockholm, November 21–25, 1955 (AJPH, 46, 1:126) has now been published. Experience with polio vaccination in a number of countries including the United States is reviewed, as well as a summary of the views of the group on the use of polio vaccine and an outline of further research needed.

Says the announcement of its publication, "This report meets an immediate need. It provides an authoritative review, by a group of internationally known scientists, on one of the most promising of recent developments in disease prevention." Poliomyelitis Vaccination: A Preliminary Review. WHO Technical Report Series, 1956 No. 101. Columbia University Press, 2960 Broadway, New York 27, N. Y.

Indian Penicillin Plant Completed

The first penicillin plant in Southeast Asia, for which the foundation stone was laid in March, 1952, was completed by the end of 1955. Its first tank of penicillin was produced in March, 1955, and its first product released in October. All products are for use in India with priority for public health projects, such as free treatment to mothers and children for yaws, syphilis, and other ailments.

The first target production of 1,000 pounds per month will be reached in the summer of 1956. Eventual monthly production is put at 2,500 pounds.

The Indian government invested $2,000,000 for construction and provision of services and all locally available items. UNICEF contributed $850,000 for imported equipment; UN Technical Assistance Administration, $300,000 for fellowships, planning, engineering, and construction, and supervision of initial operation.

Iron Lungs to Argentina

In early March the Pan American Sanitary Bureau, Regional Office of

WHO, purchased and in two shipments sent to Buenos Aires 40 iron lungs for use in the polio epidemic in that city and its vicinity. The U. S. Air Force and the Military Air Transport Service flew the shipments in a Globemaster cargo plane supplied by the U. S. Government and the two manufacturers from whom PASB purchased the lungs made available company technicians in Buenos Aires to give instruction in the operation of the machines. The National Foundation for Infantile Paralysis also sent two experts to Argentina.

Between January 1 and March 12 the Argentine government reported 1,310 cases and 120 polio deaths, largely in Buenos Aires.

American Personnel in ICA Missions

The Public Health Service reports that as of November 15 health personnel from the United States were assigned to International Cooperation Administration Missions in 43 countries from Afghanistan to Venezuela. A total of 329 public health employees, made up of PHS commissioned officers and direct employees of ICA were serving in these missions. Sanitary engineers and sanitarians were the largest number, 89, or nearly a fourth of the total. Nurses and physicians totaled 71 and 45, respectively. The remaining 124 included health educators, laboratory technicians, and a variety of others. The Iranian Mission, whose chief is Robert L. Cherry, M.D., had the largest American contingent, 31 persons; Brazil, with E. Ross Jenny as chief, was next with 26.

Dr. John F. Anderson Lectureship

John F. Anderson, M.D., has made a gift to his alma mater, the University of Virginia, to establish a lectureship in medical science or public health. It will be known as the John F. Anderson Memorial Lectures in Medicine.

Dr. Anderson, known as "one of the great microbe hunters of the world," entered the U. S. Marine Hospital Service in 1898 and was detailed to various European ports. In 1901 he joined the forerunner of the National Institutes of Health, the Public Health Service Hygienic Laboratory, becoming the director in 1909. In 1903 he described a new disease—Rocky Mountain spotted fever—and suggested the wood tick as the probable carrier. He pioneered also in disinfectants and in diphtheria and tetanus antitoxins, in research leading to the knowledge of allergy, in typhus fever, and poliomyelitis. From 1915, until his retirement in 1946, he was director of the Research and Biological Laboratories of E. R. Squibb and Sons, New Brunswick, N. J.

Dr. Anderson was president of the American Public Health Association in 1916, thus making him the oldest living ex-president. He is a Charter Fellow of the Laboratory Section and received his certificate honoring 40 years of membership in the Association in 1943.

Air Pollution Bibliography

A continuing, annotated bibliography on air pollution will be prepared by the Library of Congress for the Public Health Service. The bibliography will include references to the physical, biological, engineering, legal-administrative, and economic aspects of atmospheric pollution and an annual compendium that will be useful to laboratory scientists and administrators interested in the abatement and control of community air pollution.

This is the fourth agreement the Public Health Service has negotiated with other federal agencies under the terms of Public Law 159 of the present Congress, under which $1,785,000 was appropriated last year for Public Health Service support of air pollution research and technical assistance. The earlier

contracts were with the Bureau of Mines, Department of the Interior, and the National Bureau of Standards, and the Weather Bureau of the Department of Commerce (A.J.P.H. Feb., 1956, p. 260).

Twenty-Year Interstate Cooperation

The Interstate Sanitation Commission was organized in 1936 by New York and New Jersey, joined later by Connecticut, to combat the alarming contamination of the swimming beach waters, the destruction of fish and oyster culture areas, and the obvious signs of sewage and garbage along the waterfront of the New York harbor.

"Cleaning Up the Doorway to America" is the story of the 20 years of the commission's life. It notes with pride the fact that 58 municipalities have either built new sewage treatment facilities or improved existing ones without recourse to court action. In 10 other communities new facilities or improvements were obtained through court order. The percentage of sewage treated before discharge into waters used for recreation and fishing has grown from 43 per cent in 1936 to 99 per cent in 1956. The percentage of sewage treated that flows into other waters in the area has increased from 28 per cent to 72 per cent during the same period. Real estate values for shore parkway areas in Brooklyn have increased 76 per cent between 1945 and 1953 compared to an 8 per cent increase for the borough as a whole.

Seth G. Hess is director and chief engineer of the commission, 110 William St., New York 38, N. Y., from whom the report is available.

Kimble Award Nominations Invited

Nominations for the fifth annual Kimble Methodology Research Award are being accepted until June 1, 1956. This award, sponsored by the Conference of State and Provincial Public Health Laboratory Directors, gives recognition to the application of scientific knowledge to the public health laboratory. It was established and is supported by the Kimble Glass Company of Toledo, Ohio, a subsidiary of the Owens-Illinois Glass Company.

The cash award of $1,000 and silver plaque will be presented at a session of the conference to be held in Atlantic City, N. J., November, 1956, during the 84th Annual Meeting of the American Public Health Association, November 12–16, 1956. In order to be considered the candidate's work should be either a fundamental contribution that aids the development of diagnostic methods in a public health laboratory or its adaptation for use in a diagnostic laboratory. The work should have been completed within the preceding five years; that is work completed since January 1, 1951. Candidates may be from the United States, its territories, or Canada.

Nominations should be sent to the chairman of the Kimble Award Nominating Committee, Thomas S. Hosty, Ph.D., Bureau of Laboratories, Alabama State Department of Health, Montgomery 4.

Henri La Fontaine Prize

The Union of International Associations (Palais d'Egmont, Brussels, Belgium) is offering a $1,000 prize to the author of the best treatise on international nongovernmental organizations with particular reference to international cooperation.

Competition is open to everyone regardless of nationality. Manuscript of about 60,000 words in either French or English must be submitted before March 31, 1957. The prize will be awarded in October, 1957. If no entry reaches a standard that satisfies the jury no award will be made, but may be

made later on the basis of new entries.

The award was established on the occasion of the union's 50th anniversary and in memory of its founder, Henri La Fontaine, winner of the 1912–1913 Nobel Prize for peace and an advocate of the Court of International Justice.

Study South Dakota Department

By authorization of the 1955 session of South Dakota's Legislature an efficiency study of the State Health Department is under way. The study is being conducted by Gaylord Anderson, M.D., director of the University of Minnesota School of Public Health, and members of his staff. Herbert Bosch, professor of sanitary engineering, is studying the environmental sanitation programs of the department, Marion Murphy, R.N., professor of public health nursing, the program of the Nursing Division.

Further Honors to Florence Sabin

It was announced recently in Denver by the Dr. Florence R. Sabin Memorial Fund Committee that the late Dr. Sabin, an eminent teacher, scientist, and public health leader, is to be honored with a statue in Statuary Hall in the Capitol in Washington, D. C. Dr. Sabin's "third career" was in public health, following her careers as teacher at the Johns Hopkins University School of Medicine, Baltimore, and research worker at the Rockefeller Institute for Medical Research, New York City.

Dr. Sabin, who was a native of Colorado, provided a dynamic leadership which resulted in the reorganization and strengthening of the Colorado State Department of Health. She served for several years as manager of the Denver Bureau of Health and Hospitals and as a member of the Denver Board of Health in the critical years of its recent reorganization. She was active in the Regional Commission for Higher Education and was particularly interested in a plan for education of medical and public health personnel in the western states.

Among many other honors Dr. Sabin was the recipient in 1951 of an APHA Lasker Award for her achievements. The Colorado Public Health Association, an affiliate of the American Public Health Association, has named its Citizen's Award for outstanding contribution to public health in her honor.

The Colorado Legislature has approved the placing of a statue of Dr. Sabin in the Rotunda of the national Capitol. Funds for the statue and its installation must come from public contributions which may be sent to the Dr. Florence R. Sabin Memorial Fund Committee, 2371 Dahlia Street, Denver 7, Colo.

In speaking some years ago of the persons engaged in research and in public health Dr. Sabin said, "They only clear away a little of the underbrush to make it easier for others to move still further ahead." As the committee points out, the succeeding years have shown just how wide a swath she cut in the public health field.

Mental Health Materials Adds Staff

The Mental Health Materials Center has added field workers to its staff whose aim will be interpret and promote the use of mental health education materials, especially in state health departments. The two new field workers are Jack Neher, co-author with Dallas Pratt, M.D., of the pamphlet, "Mental Health Is a Family Affair," and with Irving Jacoby of the film "Man to Man"; and Richard Thomas, who was formerly a field representative for World University Service.

Elizabeth M. Dach, formerly of the National Institute of Mental Health, is now editor of the Human Relations Aids

Program Packet Service. To the center's panel of consultants have been added Reva Gerstein, president, National Council of Jewish Women of Canada, and Paul T. Rankin, assistant superintendent of education, Detroit, Mich.

Summer Courses

Food Technology Development

The annual food technology seminar at the Massachusetts Institute of Technology, June 18 through June 29, will present "a unified series of conferences on developments of the past decade in the broad field of foods, the impact of these developments on the food industry, and present research trends in foods." Special attention is promised to developments in "rheological measurements of foods, and to recent progress in the exciting new field of radiation sterilization . . . automation and the food industry; current knowledge of nutrition including geriatrics; the problems in assay, techniques, and toxicological testing resulting from increasing use of new agricultural chemicals to increase food acreage yields; and work simplification programs in modern food plants."

The course, for which no academic credit is offered, costs $125. Admission is accepted by application and selection made of those whose qualification and experience suggest maximum benefit from the course. Living accommodations in dormitories at $2.50 per person or $3.50 per couple per day. Early application is advised. Application blanks and further information from Office of the Summer Session, Massachusetts Institute of Technology, Cambridge, Mass.

Also being given at MIT is a two-week course beginning August 20 on Disposal of Industrial Wastes by Biochemical Process.

Neuromuscular Diseases of Children

The Cook County Graduate School of Medicine announces an intensive course in Neuromuscular Diseases of Children, with special emphasis on cerebral palsy, given by Meyer A. Perlstein, M.D., June 18–29. This is an intensive, didactic, and clinical course designed for pediatricians, orthopedists, neurologists, and physiatrists interested in the care and treatment of children with neuromuscular handicaps. Emphasis will be placed on the practical clinical aspects of treatment and rehabilitation. The course will include several field trips to demonstration clinics and treatment centers. The fee is $225, including luncheons, and expenses of travel, meals, and accommodations on the various trips. Registration is limited. Further information from John W. Neal, Registrar, Cook County Graduate School of Medicine, 707 S. Wood St., Chicago, Ill.

University of Washington

School Health Problems—The Department of Public Health and Preventive Medicine and the School of Nursing jointly, and with the cooperation of other state and local official and voluntary agencies, offer a school health problems workshop, June 25–29. The conference will consider "practical approaches to programs to meet the growth needs of school children in relation to their total environment."

Two credits may be earned. Tuition fee is $15.

Field Experience in Health Education for Teachers—A course of practical field experience in local health departments for teachers, principals, superintendents, and health coordinators will be given June 18–July 18 by the Department of Public Health and Preventive Medicine and the College of Education. The aim is to acquaint teachers with community health facilities available to

assist health services in schools. The fee for this five-credit course is $27.50.

Other public health courses offered of special interest to school personnel are Problems in Public Health, two and one-half credits; School and Community Health Programs, five credits; Community Organization and Services, three credits. Detailed information from the Department of Public Health and Preventive Medicine, University of Washington, Seattle.

Catholic University Courses

Workshop on Mental Health—Catholic University offers a workshop on Mental Health and Special Education, June 15–26, the aim of which is to try to solve "for Catholic teachers, principals, supervisors, and administrators many of the perplexing problems they encounter in their everyday school experience." Mornings will be devoted to general conferences and discussions and afternoons to a series of seminars, one of which must be elected by every student and another of which may be audited. Two university credits are granted to workshop participants. Special discussion groups may be arranged.

Fees are: registration, $5; tuition, $70; board and room, $40. Application forms and further information from Director of Workshops, Catholic University of America, Washington, D. C.

Education of the Visually Handicapped—The first of two summer sessions in a certificate program for preparing teachers of sight-saving classes, July 2–August 10 (registration June 27–30). Two separate programs are offered, one each in sight saving and Braille teaching. Completing the two summer sessions in either lead to a teaching certificate in a program approved by the Teacher and Certification Divisions of the University of the State of New York.

Fees are registration, $5; tuition, $50 for four to six semester hours credit for sisters and undergraduate seminarians and brothers; $15 per credit, all others; board, $80; room, $30–$35. Application and other information from Registrar, Catholic University of America, Washington 17, D. C.

For other summer workshops see Maryland's Institute of Acarology, and Rehabilitation Workshop, A.J.P.H. April, 1956, p. 542.

Community Nutrition Institute

Syracuse University and the New York State Health Department will hold their 10th Community Nutrition Institute at Syracuse June 17–30. Its focal point will be a family case panel. Anne Bourquin, Ph.D., chairman of the university's Department of Food and Nutrition, and John H. Browe, M.D., director of the State Health Department's Bureau of Nutrition are co-directors. Three hours of graduate credit may be earned. Approximate total cost, including board and room is $135. Further information from Dr. Bourquin, College of Home Economics, Syracuse University, Syracuse 10, N. Y.

Six Health Education Workshops

The Inter-Agency Planning Committee for Health Education Workshops in Pennsylvania, composed of representatives of the state's Departments of Health, Welfare, and Public Instruction, the Tuberculosis and Health Society, and the Medical Society, with various local voluntary agencies, is sponsoring six workshops in Community-School Health Education as follows:

Pennsylvania State University, June 11–29
University of Pittsburgh, June 18–29
Lehigh University, June 19–July 6
West Chester State Teachers College, June 25–July 13
Slippery Rock State Teachers College, June 25–July 13
Temple University, July 2–20.

The University of Pittsburgh Workshop will be an experimental workshop for a period of two weeks.

School Health Workshop

A workshop on school health programs at Ohio University June 19–July 7 "will provide background for the improvement" of such programs. Designed for teachers, nurses, administrators, and others with responsibility for the health of school age children, it is recommended that the team of principal, teachers, and nurse from an area attend.

Four credit hours may be earned by registering in a specific physical education course. Fee is $33; rooms in the college dormitory or nearby homes are available. Further information from Florence Fogle, Room 8, University School, Ohio State University, Columbus 10.

An Alcoholism Information Center

The Alcoholism Information Center of the Jackson County Department of Public Health in Michigan has issued its first annual report. The first such program in the state, it has two main objects—community education designed to acquaint the community with the nature of the problem of alcoholism, thus enabling individuals and groups to understand their role in a truly cooperative program to prevent the disease, and to treat and rehabilitate the individual alcoholic and his family and group contacts.

In this county of nearly 110,000 population the center saw 108 patients during the first year. Of these, 33 were improved markedly during the year. The program cost less than $15,000 to operate. To offset this, however, the patients earned $108,800 more in wages than in the previous year and the community spent $97,000 less in their behalf—a net gain to patients and community of more than $96,000.

Standard Methods in Spanish

Standard Methods for the Examination of Water, Sewage, and Industrial Wastes has been translated into Spanish especially for laboratory personnel in Spanish-speaking countries. It is being made available as a public service by the Institute of Inter-American Affairs. The translation was prepared by Ing. Pedro J. Caballero, chief, Water Supply Laboratories, Mexican Ministry of Hydraulic Resources.

Institute of Inter-American Affairs, Division of Health, Welfare, and Housing, Apartado 23-bis, Mexico 1, D.F.; $6. Checks or money orders should be made to Treasurer of the United States.

U. S. Medical Scientists in Russia

Following a month-long visit of a team of Russian scientists to the United States (A.J.P.H. Feb., 1956, p. 262), five American medical scientists spent March in Russia visiting various places of scientific interest in the Soviet Union and meeting with Russian research scientists in their respective fields. The trip to Russia was arranged by the Public Health Service at the request of the Department of State.

The five United States scientists are:

Karl F. Meyer, M.D., director emeritus, Hooper Foundation, University of California Medical Center, San Francisco

John R. Paul, M.D., professor of preventive medicine, Yale University Medical School, New Haven, Conn.

Richard E. Shope, M.D., research specialist in virus disease epidemiology, Rockefeller Institute, New York City

Colin M. MacLeod, M.D., professor of microbiology, Bellevue-New York University Medical Center, New York City

Michael B. Shimkin, chief, Biometry and Epidemiology Branch, National Cancer Institute, Bethesda, Md.

Mental Health Training Program

The Council on Training and Research in Mental Health was created

by the 1955 Florida Legislature to advise and consult with the State Board of Health on problems of mental health training and research. This council grew out of a conference called by the Southern Governors' Conference Southern Regional Education Board in July, 1954, which recommended a Southern Regional Council on Mental Health Training and Research and which was formally organized in July, 1955. The program is supported by the participating states of Florida, Kentucky, Louisiana, Maryland, and Tennessee which have made funds available.

The Florida council's first semiannual report for the last half of 1955 outlines an ambitious program of training. The Legislature has appropriated $250,000 for the first biennium for training grants to Florida residents who must either work in Florida or repay the amount of the grant. Provision is also made for mental health research grants.

At the beginning of 1956 nine students had received scholarships, eight to study at the Tallahassee School of Social Welfare, one at Tulane University.

Five stipends are allowed for a training program for psychiatric nurses and the State Board of Health is authorized to employ a psychiatric nurse director. This program will begin in the fall of 1956.

Florida Council on Training and Research in Mental Health, Robert W. Kleemeier, Ph.D., Chairman, P. O. Box 210, Jacksonville.

National Forum on Chronic Illness

The responsibility of the individual was one of four priorities suggested by the National Health Forum held March 21 and 22 in New York City as a part of the 36th annual meeting of the National Health Council. The theme of the forum was "Action Today, Tomorrow, Together on Chronic Illness." The "do-it-yourself" responsibility of all Americans is to seek medical aid in the prevention, detection, and care of such ills as cancer, heart disease, and diabetes and in cooperating to develop whatever community health services are needed to meet the problems of long-term illness or disability.

Other priorities recommended are the close working together of the medical and social sciences for good community organization; providing the tools through which people may understand both the common aspects of the various chronic diseases as well as those that require flexibility in community services. Finally, an inventory of sickness in the nation is needed, together with what is still required in planning and in services.

The Executive Committee of the National Health Council accepted the statement of the Program Committee that "The goal for the Council should be to provide a continuing mechanism through which the organizations concerned with chronic illness can work together, direct concerted attention to the problems of chronic illness, and stimulate action by appropriate organizations."

Addressing the 800 persons who attended the forum, keynoter Leonard Mayo said that chronic illnesses account for 88 per cent of disabilities in the United States. Charles I. Schottland, U. S. commissioner of social security, at a luncheon meeting indicated the probability of a continuing national survey of disease and illness by the Public Health Service. Preventive action against chronic disease is already under way by millions of people in thousands of communities, according to Lowell T. Coggeshall, M.D., special assistant for health and medical affairs, U. S. Department of Health, Education, and Welfare, speaker at the closing banquet. Morton Levin, M.D., assistant commissioner for medical services, New York State Department of Health, in summarizing the

forum pointed to the need for using some of the money currently available for two purposes—to provide some of the services common to the varieties of chronic illness and to assay the effectiveness of current spending.

Theodore G. Klumpp, M.D., president of Winthrop Laboratories, was chairman of the forum and its 47-member planning committee and was reelected vice-chairman of the council at the business meeting following the forum. President-elect Leona M. Baumgartner, M.D., New York City health commissioner, succeeded Hugh R. Leavell, M.D., professor of public health practice, Harvard School of Public Health as president. Basil O'Connor, president, National Foundation for Infantile Paralysis, was chosen president-elect. Two new vice-presidents were elected—Ruth Freeman, Ed.D., president of the National League for Nursing, and Norvin Kiefer, M.D., medical director, the Equitable Life Assurance Society of the United States. James E. Perkins, M.D., managing director, National Tuberculosis Association, and Philip R. Mather, president, American Social Hygiene Association, respectively, were reelected secretary and treasurer, the latter for a seventh term.

The 1957 forum will be held in Cincinnati, March 20–21, as agreed by the council's Board of Directors. Thus will begin a plan to rotate the forum through different parts of the country to make it in fact "a conference ground for all the American people."

A summary report of the forum will soon be available. The new directory of the council's 50-member agencies is presently ready for distribution at 75 cents. 1790 Broadway, New York 19.

PERSONALS

RICHARD M. ASH, M.D., a former health commissioner of the city has succeeded BROOKS K. RYDER, M.D.,* as Quincy, Mass., health commissioner.

JOSEPH C. AUB, M.D.,* professor of medical research, Harvard Medical School, and director of medical laboratories at the Collis P. Huntington Memorial Hospital, is the 1956 recipient of the Bertner Foundation Award.

PAUL BARENBERG,† former Captain, U. S. Army, Fort Dix, N. J., is now director, Division of Sanitation, Peoria, Ill., Health Department.

F. C. BISHOPP, Ph.D., retired from the U. S. Department of Agriculture, is serving as consultant to the Ministry of Agriculture of Egypt under the auspices of the International Cooperation Administration.

IRMA BLOCK, R.N., former supervisor of public health nurses, First District Health Department, is now assistant director of public health nursing, North Dakota State Health Department.

PHILIP E. BLACKERBY, JR., D.D.S.,* director, Division of Dentistry, has been named to the newly created post of associate general director, W. K. Kellogg Foundation, Battle Creek, Mich. Dr. Blackerby is chairman of the Committee on Professional Education, APHA.

ANN P. BOOTH,† former executive secretary, Health Division, Welfare and Health Council of New York City, is now on the staff of the Health Career Horizons Project, National Health Council.

FLORENCE CUNNINGHAM, R.N., M.P.H., former supervisor, Yonkers (N.Y.) Health Department, has been appointed nurse consultant, National Society for the Prevention of Blindness, succeeding BURNETTA BLATT DOWNING,† resigned.

WALLACE T. EAKINS,† chief, Bureau of Grants-in-Aid, Division of Local Health Services, New Jersey State Department of Health, has retired after more than 43 years of service.

ROY K. EVANS, M.D., is health commissioner of the new full-time Ottawa County-Port Clinton Health Department, Ohio.

S. NORMAN FEINGOLD,† executive director, Jewish Vocational Service of Greater Boston, has recently been appointed a consultant for the Bellman Publishing Company's Scholarships, Fellowships and Loans News Service, a national clearing house of student aid.

RACHEL H. FERGUSON,* director, Bureau of Nutrition, West Virginia State Health Department, has resigned to become nutrition specialist, Agricultural Extension Division, North Carolina State College, Raleigh.

WILLIAM I. FISHBEIN, M.D.,† epidemiologist,

* Fellow.
† Member.

Chicago Health Department, has resigned to become medical consultant to an eastern manufacturer of low-calorie foods.

ROBERT W. FISHER is now a sanitarian, Tuscarawas County Health Department, Ohio.

GILBERT E. GAYLER, M.D.,* health officer, Worcester Office, Central Health District, Massachusetts State Department of Health, has resigned to join the staff of the Los Angeles (Calif.) Health Department.

CALVIN T. GRANT, formerly with the Oklahoma state sanitary engineers, is now with the Oklahoma State Health Department, assigned to the northeast division.

CORA BUCKWALTER GUNTHER, Ph.D., advanced bacteriologist, Bureau of Laboratories, Pennsylvania State Department of Health, at Philadelphia, has retired after 25 years of continuous service. She sailed for a tour around the world with her sister on March 6.

A. DAVID GUREWITSCH, M.D., assistant attending physician in charge of physical medicine, Neurological Institute, New York City, has been named director of medical services, Institute for the Crippled and Disabled.

J. R. HAGGERTY, former assistant public health engineer, Bureau of Sanitary Engineering, Wisconsin State Health Department, is now in the Office of Hospital Survey and Construction, Michigan State Health Department, Lansing.

RONALD HELPS, former executive assistant to the general manager, Pfizer Laboratories Division, Chas. Pfizer & Company, Brooklyn, has been named executive director, Occupational Health Institute, New York City, to supervise administrative and effective functioning of the activities of OHI.

CURTIS M. HILLIARD,* professor of biology and public health, Simmons College, has retired as agent, Wellesley (Mass.) Health Department, and has been succeeded by former executive director, Middlesex Health Association, DAVE MOXON.

WILLIAM A. HOLLA, M.D.,† was honored in February by a county-wide dinner attended by 450 persons on his retirement after 14 years as commissioner of health, Westchester County, White Plains, N. Y.

L. EMMETT HOLT, JR., M.D., chairman, Department of Pediatrics, New York University College of Medicine, has received the 1955 Borden Nutrition Award, consisting of a gold medal and $1,800, of the American Academy of Pediatrics "in recognition of his many contributions, during recent years, to the field of infant nutrition and, specifically, in recognition of his careful determinations of the minimal nutrition regulations for essential amino acids and vitamins."

FRANK J. HUBBARD, former sanitary inspector, Cattaraugus County (N.Y.) Health Department, is now with the Niagara Falls Health Department.

U. PENTTI KOKKO, M.D.,† former director, Local Health Services, Kentucky State Department of Health, has resigned to become assistant chief of the laboratory branch, Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.

JAMES E. LASH, former chief, West Coast office of Harland-Bartholomew and Associates, city planning consultant firm of San Francisco, has been appointed executive director of the American Council to Improve Our Neighborhoods, New York City, succeeding MARTIN MEYERSON, who has returned to the University of Pennsylvania (Philadelphia) faculty.

LISEL LOWEN, M.P.H.,† formerly in the Public Information Unit, New York City Department of Health, has been appointed director of health education, Greenwich Health Association, Greenwich, Conn.

ANDREW L. MCCABE, former assistant personnel officer, Philadelphia Department of Health, has been named director, Division of Personnel, Pennsylvania State Health Department, succeeding DONALD E. LEMMON, resigned to become director, Koppers Company, Pittsburgh.

L. S. MCLEAN, M.D.,* director, Division of Local Health Services, Montana Board of Health, has resigned to become director, Humbolt-Del Norte Bi-County Department of Public Health, Eureka, Calif.

GERTRUDE E. MORRIS, R.N.,† has been appointed executive secretary, Public Health Federation, Cincinnati, Ohio, the position from which Bleecker Marquette * retired in 1954 after 35 years of service.

RICHARD C. MURPHY, M.D.,† former district health officer, Greater Anchorage Health District, Alaska Department of Health, has succeeded JACK B. EASON, M.D.,† as regional health officer, Southcentral Region, and will continue in a supervisory capacity to the Greater Anchorage Health District until a successor is recruited.

GEORGE NEWTON, M.D., retired Army Medical Corps officer, succeeded GAIL MILLER, M.D.,† health commissioner of the Allen County-Lima-Delphos Health Department, Ohio.

F. M. OXLEY, M.D., commissioner of health,

* Fellow.
† Member.

Clermont County Health Department, Ohio, has resigned.

CARROLL E. PALMER, M.D., and LAURENCE IRVING, M.D., Public Health Service officers, have been awarded honorary degrees of doctor medicinae honoris causa by the University of Oslo, Norway, a degree awarded to distinguished foreigners once in five years.

JOHN H. RENDOK, M.D., formerly in private practice in Springfield, has been appointed consultant in maternity, Bureau of Maternal and Child Health, Illinois State Department of Public Health.

MARGUERITE RIDENOUR, R.N., has succeeded MURIEL KAY as public health nurse, Pike County Health Department, Ohio.

LYLE J. ROBERTS, M.D.,† health officer, Public Health District No. 6, Berkeley, Jefferson, and Morgan Counties, Martinsburg, W. Va., has retired and been succeeded by FLOYD R. TOWN, M.D., former health commissioner, Cambridge-Guernsey County Health Department, Ohio.

R. C. STEELE, formerly with the New Mexico state engineering office, is now assigned to the southwest division, Oklahoma State Health Department.

IRVING R. TABERSHAW, M.D.,† director, Division of Industrial Hygiene, New York State Labor Department, has been elected vice-president of the American Academy of Occupational Medicine to succeed E. E. EVANS, M.D., of E. I. Du Pont de Nemours and Co., elected president.

BEVERLY VAN DEVENTER,† former district nutritionist, Wisconsin State Board of Health, is now regional home economist, Wheat Flour Institute, Chicago, serving the 12 Northeastern states.

DEWARD E. WAGGONER, Ph.D.,* former statistician, International Cooperation Administration, Health and Sanitation Division in Cairo, Egypt, has been appointed chief, Natality Section, National Office of Vital Statistics, Public Health Service, Washington, D. C.

W. LANEY WHITEHURST, M.D.,* former health officer-at-large, Florida State Board of Health, has been appointed director of the board's Bureau of Mental Health.

JAMES L. WHITTENBERGER, M.D.,† and BENJAMIN G. FERRIS, M.D., professor and assistant professor, respectively, of physiology, Harvard School of Public Health, and specialists in problems of respiration, were recently called to Argentina for consultation regarding that country's polio epidemic.

* Fellow.
† Member.

PROFESSOR ROBERT B. WOODWARD of Harvard University has received the 1956 William H. Nichols Medal of the American Chemical Society's New York Section in recognition of his achievements in duplicating in the laboratory a number of nature's most complicated substances, such as the synthesis of quinine, cortisone, and lysergic acid.

JOSEPH ZUBIN, Ph.D., principal research scientist, New York State Department of Mental Hygiene, is in charge of the new biometrics unit in the department, a research group that is bringing biometric methods to bear on the problems of psychiatry.

DEATHS

BLAIR I. BURNSON,† supervising sanitary engineer, East Bay Municipal Utility District, Oakland, Calif. (Engineering Section).

HARRISON EILERS, M.D., M.P.H.,* medical director, General Hospital, San Luis Obispo, Calif., on January 8 (Health Officers Section).

ALMA C. HAUPT, R.N.,* formerly director, Nursing Bureau, Health and Welfare Division, Metropolitan Life Insurance Co., New York, N. Y., and recently residing in San Francisco, Calif., on March 16 (Public Health Nursing Section).

COLONEL EVAN E. KIMBLE of Kimble Glass on March 15 at the age of 87.

ERNEST A. LOWINGER, M.D.,† deputy registrar and chief, Section of Vital Statistics, Chicago Department of Health, on March 4 (Statistics Section).

C. E. MERRITT, M.D.,† Lake City, Mich. (Health Officers Section).

JOHN R. MOONEY,† health officer, Village of South Orange (N.J.) Health Department on July 21, 1955 (Health Officers Section).

ALBERTO RECIO-FORNS, M.D.,† president of the Cuban Society of Public Health (Epidemiology Section).

P. R. YORK,† consultant sanitarian, Knox County (Tenn.) Health Department on May 27, 1955 (Engineering Section).

CONFERENCES AND DATES

American Public Health Association, 84th Annual Meeting, Atlantic City, N. J. Headquarters: Convention Hall, Atlantic City, N. J., November 12–16.

State and Regional Public Health Meetings:

California, Northern, Public Health Association. May 18.

Colorado Public Health Association. Estes Park, Colo. June 7–8.
Georgia Public Health Association. Hotel DeSoto, Savannah, Ga. May 28–30.
Idaho Public Health Association. McCall, Idaho. May 4–5.
Indiana Public Health Association. Indiana State Board of Health Bldg., Indianapolis, Ind. May 10–11.
Louisiana Public Health Association. Lake Charles, La. April 19–20.
Michigan Public Health Association. Hotel Statler, Detroit, Mich. May 9–11.
Missouri Public Health Association. Municipal Auditorium, Kansas City, Mo. June 11–13.
New England Health Institute. Durham, N. H. June 12–14.
New York City Public Health Association. Cornell University Medical College, New York, N. Y. May 15.
New York State Public Health Association. Lake Placid Club, Lake Placid, N. Y. June 4–7.
North Carolina Public Health Association. Hotel Charlotte, Charlotte, N. C. May 31–June 1.
Oregon Public Health Association. Pilot Butte Inn, Bend, Ore. May 10–11.
Utah Public Health Association with Western Branch, APHA. Hotel Utah, Salt Lake City, Utah. May 31–June 2.
West Virginia Public Health Association. Daniel Boone Hotel, Charleston, W. Va. June 7–8.
Western Branch, APHA, with Utah Public Health Association. Hotel Utah, Salt Lake City, Utah. May 30–June 2.
Wisconsin Association for Public Health. Memorial Union, University of Wisconsin, Madison, Wis. June 6–8.

Meetings of Other Organizations Coming in May, June, and July, 1956:

American Hearing Society. Washington, D. C. June 7–9.
American Medical Association. Annual Convention, Chicago, Ill. June 11–15.
American National Red Cross. St. Louis, Mo. June 4–6.
American Nurses' Association. Biennial Convention. Chicago, Ill. May 14–18.
American Society of Medical Technologists. Quebec City, Quebec, Canada. June 17–22.
American Water Works Association. St. Louis, Mo. May 6–11.
Association of State Maternal and Child Health and Crippled Children's Directors. Biennial Meeting, with representatives of the Children's Bureau. Indianapolis, Ind. June 7–9.
Canadian Public Health Association. Saint Johns, New Brunswick, Canada. May 29–31.
Convention of the National Association of Clinical Laboratories. Claridge Hotel, Atlantic City, N. J. May 25–27.
Mexican National Congress of Pediatrics, Sixth. Mexico City, D. F., Mexico. May 1–6.
National Association for Practical Nurse Education. Edgewater Beach Hotel, Chicago, Ill. May 7–11.
National Cancer Conference (Third). American Cancer Society and National Cancer Institute, Detroit, Mich. June 4–6.
National Conference of Social Work. St. Louis, Mo. May 20–25.
National Tuberculosis Association. 52nd Annual Meeting with American Trudeau Society and the National Conference of Tuberculosis Workers. New York, N. Y. May 20–24.
New England Health Education Association. University of Connecticut, Storrs, Conn. May 11–12.
Planned Parenthood Federation of America. Waldorf-Astoria Hotel, New York, N. Y. May 1–4.
Symposium on Venereal Diseases and the Treponematoses. Statler Hotel, Washington, D. C. May 28–June 1.
World Confederation for Physical Therapy. Second Congress. Hotel Statler, New York, N. Y. June 17–23.

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Association for the Aid of Crippled Children, New York, N. Y.
George Baehr, M.D., New York, N. Y.
Borden Company, New York, N. Y.
Chicago Office, Theatre, and Amusement Building Janitors' Union, Local 25, Chicago, Ill.
Chlorine Institute, Inc., New York, N. Y.
Congress of Industrial Organizations, Washington, D. C.
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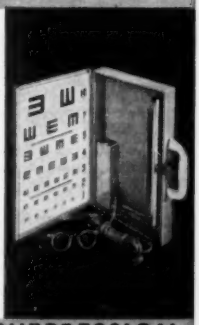

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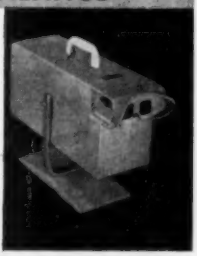

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